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ELEMENTS
OF
MATERIA MEDICA
AND
PHARMACY.

ELEMENTS

OF

MATERIA MEDICA

AND

PHARMACY

BY

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PREFACE.

IN the following pages I have classified the Materia Medica of the British Pharmacopœia, and arranged the matter in such order as I believe is best adapted for its study. The subject is treated under the heads of Materia Medica and Pharmacy, the first of these being subdivided into Chemical or Inorganic Materia Medica, and Organic Materia Medica. A few chapters are added on allied subjects. I was chiefly induced to adopt the foregoing arrangement by the fact that Pharmacy cannot be intelligently understood until Chemistry and Materia Medica have been well studied ; the reverse of that order of study, in plain speaking, would be placing the cart before the horse. I wish it to be understood that the Pharmacy of this book is but a small contribution to that wide-ranging subject, but it was evident to many friends, as to myself, that grouping formulæ into a pharmaceutical section had many advantages.

To avoid monotonous and needless repetition of the same test, the chemical reactions of the acids and bases are given separately, and should be learnt as the first lesson, unless the student knows them.

When solutions are made by methods involving chemical changes, they will generally be found both in the Materia Medica and Pharmaceutical sections; in the former to show the reaction by equation, in the latter to give quantities and processes.

An almost general opinion, and one with which I agree, is, that it is a waste of time and effort for students to learn the proportions of ingredients in the official preparations, excepting those containing some powerful or toxic drug; such knowledge is of the most fugitive and unreliable character, and moreover, no man would be deemed worthy of confidence who commonly made preparations from memory.

The short therapeutics of the book have been entirely selected and arranged by myself; they are based upon the requirements indicated in the synopsis of subjects for the first part of the examination of the Royal College of Physicians. I had some doubts about introducing them, being fully aware that rational therapeutics and pharmacology are the only safe paths by which a sound knowledge of the subject can be reached; but the requirements of examinations, and, therefore, the wants of students, decided me to retain them. To Dr. Angel Money I am deeply indebted for reading this section of the book, and making some valuable suggestions.

By an inadvertence the natural order *Ternstrœmiaceæ* is misplaced; it should follow the natural order *Sterculiaceæ.*

It is my pleasure to thank Mr. E. M. Holmes for his valuable assistance in correcting proofs of botanical and descriptive matter; likewise Mr. Philip Princep for his help on several occasions.

My obligations and acknowledgments are due to the following authors, whose works I have used for reference :—Fluckiger and Hanbury, Dr. Sydney Ringer, Dr. Lauder Brunton, Dr. J. Attfield, Adolphe Wurtz, Bentley and Trimen.

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ERRATA.

To follow line 27, page 86 :—

BISMUTHI OXIDUM. Bi_2O_3.

Oxide of Bismuth.

Made by boiling subnitrate of bismuth with solution of soda, washing and drying the precipitate.

$$\underset{\text{Subnitrate of bismuth.}}{2BiONO_3} + \underset{\text{Sodium hydrate.}}{2NaHO} = \underset{\text{Oxide of bismuth.}}{Bi_2O_3} + \underset{\text{Sodium nitrate.}}{2NaNO_3} + \underset{\text{Water.}}{H_2O}.$$

Characters.—A lemon-yellow powder, insoluble in water, soluble in nitric acid.

Therapeutics.—Same as subnitrate of bismuth.

Dose.—5 to 15 grains.

Page 137, last line, *for* "esserine," *read* "eserine."

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INORGANIC DIVISION.

DEFINITION OF CHEMICAL GROUPS.

ELEMENTS.

Elements are simple substances, incapable of division into two or more bodies. The following are official in their elementary form:—Carbon, Sulphur, Chlorine, Bromine, Iodine, Phosphorus, Copper, Zinc, Bismuth, Iron, Mercury, Sodium, Silver.

ANHYDRIDES.

These are oxygen compounds which enter into combination with water to form acids. Two are official. Arsenious Anhydride (As_2O_3), and Chromic Anhydride (CrO_3).

ACIDS.

These may be regarded as salts of hydrogen. They generally have a sour taste, redden blue litmus paper, and form salts with bases. The official acids are: Acetic, Benzoic, Boric, Chromic, Carbolic, Citric, Gallic, Hydrobromic, Hydrochloric, Hydrocyanic, Lactic, Nitric, Oleic, Nitro-Hydrochloric, Meconic, Oxalic, Phosphoric, Sulphuric, Sulphurous, Salicylic, Tannic, Tartaric.

Of the above Carbolic is not a true acid, but a phenol, whose proper name is Phenyl Hydrate.

ALCOHOLIC DERIVATIVES.

These are compounds or salts of the alcohols of the carbon series. The official alcohols are Ethylic and

Amylic; to these may be added Glycerine, as it is an alcohol obtained from fats.

The official derivatives of amylic alcohol are, Nitrite of Amyl and the Valerianates. Those of ethylic alcohol are Ether, Acetic Ether, Nitrous Ether, Sodium Ethylate.

ALKALOIDS.

These highly important therapeutic agents may be defined as organic bases, formed on the type of ammonia. The pure bases are alkaline in reaction forming salts with acids. They constitute the chief group of active principles of plants. Many are very powerful poisons. Those official, either as the pure base or a salt, are the following:—Apomorphine, Aconitine, Atropine, Caffeine, Cocaine, Codeine, Beberine, Strychnine, Morphine, Physostigmine, Pilocarpine, Quinine.

BASES.

These are substances reacting with acids to form salts. Two kinds of bases may be distinguished: (1) Elementary bases, to which the metals belong; (2) Compound bases, such as Ammonia and the Alkaloids.

SALTS.

In this group we include all combinations made up of an acid and a base.

GLUCOSIDES.

These are organic compounds, obtained from plants. When heated with an acid they yield glucose.

Examples are Tannin, Colocynthin, Salicin.

CARBO-HYDRATES.

This group consists of compounds, containing carbon, oxygen, and hydrogen; the two latter being in proportions to form water. Cane Sugar, Milk Sugar, and Starch, are official examples.

CHEMICAL REACTIONS OF BASES AND ACIDS COMMONLY USED IN MEDICINE.

BASES.

Arsenic.—A solution in hydrochloric acid gives a yellow precipitate with hydric sulphide, soluble in ammonic sulphide.

A second portion with ammonio-sulphate of copper gives a precipitate of Scheele's green.

Antimony.—A solution in hydrochloric acid gives an orange precipitate with hydric sulphide soluble in ammonic sulphide.

A second portion of solution poured into water gives a white precipitate, soluble in tartaric acid.

Bismuth.—A solution in hydrochloric acid gives a brownish-black precipitate with hydric sulphide insoluble in ammonic sulphide.

A second portion of acid solution poured into water gives a white precipitate, insoluble in tartaric acid.

Mercuric.—All solutions give a yellow precipitate with caustic potash; and a red precipitate with potassium iodide, soluble in excess.

Mercurous, Silver, Lead.—All solutions of these bases give white precipitates with hydrochloric acid; on adding ammonia to the precipitates, mercurous blackens, silver dissolves, lead is unchanged. Calomel will not dissolve in water or hydrochloric acid, but on adding ammonia to the solid, it blackens.

Soluble lead salts all give a yellow precipitate with potassium iodide.

Copper.—All acidified solutions deposit the metal copper on a bright steel surface.

All solutions give a deep blue solution with excess of ammonia.

Ferric or Persalts of Iron.—All solutions give brown precipitates with caustic potash, and blue precipitates with ferrocyanide of potassium.

Ferrous or Protosalts of Iron.—All solutions give green precipitate with caustic potash, and blue with ferrocyanide of potassium.

Alum.—A solution gives a white precipitate with caustic potash soluble in excess, but again precipitated on adding chloride of ammonium.

Zinc.—All solutions give a white precipitate with caustic potash soluble in excess, but again precipitated by ammonic sulphide.

Calcium.—All solutions give a white precipitate with ammonium oxalate, insoluble in acetic, soluble in nitric acid.

Magnesium.—All solutions give with ammonia, and phosphate of sodium, a white crystalline precipitate.

Ammonium.—Solutions, either alone, or when heated with caustic potash, evolve ammonia, known by its odour, and by its vapour, bluing red litmus.

Potassium.—All soluble salts give with excess of tartaric acid a white crystalline precipitate. With a fresh portion made acid with HCl, perchloride of platinum gives a yellow crystalline precipitate.

Sodium.—All salts impart an intense yellow colour to flame.

ACIDS.

Citrates and Tartrates.—These when heated as solids char. In solution tartrates give a white precipitate with calcic chloride.

In solution, citrates give no precipitate with calcic chloride until boiled, then a white one falls.

Benzoates.—Heated on platinum burn with a smoky flame. In solution they give a buff precipitate with ferric chloride.

Nitrates.—In solution give with strong sulphuric acid and ferrous sulphate, a brownish-black ring. By adding to the same mixture some copper foil and warming, red fumes are evolved.

Chlorates.—Heated as solids they deflagrate, and the residue, being a chloride, on solution in water, gives a white precipitate with silver nitrate, insoluble in nitric acid, soluble in ammonia.

Carbonates.—All effervesce with sulphuric acid, and the gas evolved passed into lime water renders it turbid.

Sulphites.—Effervesce moderately with sulphuric acid, evolving SO_2, a gas smelling of burning sulphur.

Acetates.—With sulphuric acid evolve acetic acid, known by its vinegar-like odour. With ferric chloride they usually give a red solution.

Chlorides. — With strong sulphuric acid, manganese dioxide, and heat, evolve chlorine. Soluble chlorides with silver nitrate give a white precipitate, insoluble in nitric acid, soluble in ammonia.

Bromides. — With strong sulphuric acid, manganese dioxide, and heat, evolve bromine. In solution they give a very pale yellow precipitate with silver nitrate, soluble in a large excess of ammonia.

Iodides.—Give with strong sulphuric acid and heat a violet vapour of iodine. In solution they give a red precipitate with mercuric chloride.

Sulphates. — All soluble sulphates give with barium chloride a white precipitate, insoluble in nitric acid.

Phosphates.—With silver nitrate give a yellow precipitate, easily soluble in nitric acid. With ammonia, and sulphate of magnesia, a white crystalline precipitate.

Arseniates.—With silver nitrate give a pale red precipitate, easily soluble in nitric acid. With ammonia, and sulphate of magnesia, a white crystalline precipitate.

Borates.—Give, with strong sulphuric acid and alcohol, a mixture which burns with a green flame.

Chromates.—Give with silver nitrate a dark red precipitate. With acetate of lead a yellow precipitate.

Cyanides.—With sulphuric acid evolve hydrocyanic acid, known by its odour. With a ferrous and ferric solution, caustic potash and hydrochloric acid, they produce Prussian blue.

ELEMENTARY BODIES.

OXYGEN. O.

Oxygen.

Made by heating chlorate of potassium, or manganese dioxide :—

$$(1)\ \underset{\text{Chlorate of potassium.}}{KClO_3} = \underset{\text{Chloride of potassium.}}{KCl} + \underset{\text{Oxygen.}}{3O}$$

$$(2)\ \underset{\text{Manganese dioxide.}}{3MnO_2} = \underset{\text{Mangano-manganic oxide.}}{Mn_3O_4} + \underset{\text{Oxygen.}}{2O}$$

Therapeutics.—A solution in water acts as a slight stimulant. In Russia the gas is used as an inhalation for asthma.

CHLORINE. Cl.

Chlorine.

Made from common salt by the action of sulphuric acid and manganese dioxide :—

$$\underset{\text{Manganese dioxide.}}{MnO_2} + \underset{\text{Sulphuric acid.}}{2H_2SO_4} + \underset{\text{Chloride of sodium.}}{2NaCl} = \underset{\text{Chlorine.}}{Cl_2} + \underset{\text{Sulphate of manganese}}{MnSO_4} +$$

$$\underset{\text{Sulphate of sodium.}}{Na_2SO_4} + \underset{\text{Water.}}{2H_2O}$$

OFFICIAL PREPARATIONS.

Liquor Chlori.
Vapor „

Therapeutics.—Stimulant and antiseptic. Powerful and valuable disinfectant.

Dose.—Chlorine water, 10 to 30 minims.

BROMUM. Br.

Bromine.

Obtained from the mother liquor of sea water, by treatment with chlorine gas. The chlorine liberates the bromine, which is dissolved out by shaking with ether. The ether is now shaken with caustic soda, when bromide and bromate of sodium separate. The bromide and bromate of sodium are finally heated, then decomposed with sulphuric acid and manganese dioxide, the bromine distils :—

$$\underset{\text{Bromide of sodium.}}{2NaBr} + \underset{\text{Sulphuric acid.}}{2H_2SO_4} + \underset{\text{Manganese dioxide.}}{MnO_2} = \underset{\text{Bromine.}}{Br_2} +$$

$$\underset{\text{Manganese sulphate.}}{MnSO_4} + \underset{\text{Sulphate of sodium.}}{Na_2SO_4} + \underset{\text{Water.}}{2H_2O}$$

Characters.—Bromine forms a dark-red, fuming liquid, sparingly soluble in water, freely soluble in alcohol and ether. Its vapour is highly irritating and poisonous.

Therapeutics.—Caustic, rarely employed in the free state, on account of its offensive smell.

IODUM. I.

Iodine.

Made from kelp, the ashes of seaweed. A solution of the kelp is evaporated, so as to crystallise out the sulphates and chlorides of potassium and sodium present. The mother liquor is now treated with sulphuric acid and manganese dioxide ; heat being applied the iodine distils :—

$$\underset{\text{Iodide of sodium.}}{2NaI} + \underset{\text{Sulphuric acid.}}{2H_2SO_4} + \underset{\text{Manganese dioxide.}}{MnO_2} = \underset{\text{Iodine.}}{2I} + \underset{\text{Sulphate of manganese.}}{MnSO_4} +$$

$$\underset{\text{Sulphate of sodium.}}{Na_2SO_4} + \underset{\text{Water.}}{2H_2O}$$

Characters.—Iodine forms laminar crystals of metallic lustre; heated it yields violet-coloured vapours. It is sparingly soluble in water, freely in alcohol and ether, also in water containing iodide of potassium. A solution of iodine turns starch almost a black colour.

Iodine may contain as impurities iodide of cyanogen, manganese dioxide, fixed salts, and water. Iodide of cyanogen is detected by heating the iodine gently in a proper vessel, when the iodide sublimes and is deposited in long transparent needle-shaped crystals. Fixed salts would remain after subliming the iodine.

OFFICIAL PREPARATIONS.

Linimentum Iodi.
Liquor ,,
Tinctura ,,
Vapor Iodi.
Unguentum Iodi.

The following contain combined iodine :—

Arsenii Iodidum.
Iodoformum.
Potassii Iodidum.
Plumbi ,,
Ferri Iodidum (Syrup and Pill).
Hydrargyri Iodidum Rubrum.
Sodii ,, ,,
Sulphuris ,, ,,

Therapeutics.—Alterative, used for scrofula, glandular enlargements, syphilis, gout, rheumatism, dropsy, and skin diseases. Employed externally as a stimulant, irritant, or vesicant. The liniment is applied to the chest in chronic pleurisy, also around joints affected with rheumatism and synovitis. The ointment is a valuable application for unbroken chilblains. Iodine is used as a deodoriser, and disinfectant, by exposing it in an open vessel near the patient.

Dose.—Iodine, ½ to 2 grains; tincture, 5 to 20 minims.

CARBON. C.

Carbon.

Two varieties are official, known respectively as animal and vegetable charcoal.

ANIMAL CHARCOAL.—Made by burning bones in partly closed iron vessels. It contains about 90 per cent. of phosphate of lime, the remainder being chiefly carbon.

VEGETABLE CHARCOAL.—Made by burning billet wood at a low red heat, with a limited supply of air.

OFFICIAL PREPARATIONS.

Cataplasma Carbonis.
Carbo Animalis Purificatus.

The latter preparation is made by dissolving out the phosphate of lime from animal charcoal, with hydrochloric acid, and washing the residue with water till free from acid.

Therapeutics.—Given as an antacid in dyspepsia. Used in the form of poultice it prevents the unpleasant smell of ulcers. It has great absorptive power; hence given as an antidote to vegetable poisons.

Dose.—1 to 4 drachms in water.

SULPHUR. S.

Sulphur.

Found in the free state in volcanic districts; also combined as sulphides of metals. Two varieties are official: (1) sublimed sulphur; (2) precipitated sulphur.

SUBLIMED SULPHUR.—Made by passing the vapour of sulphur into a cool chamber, where it falls as a gritty yellow powder.

PRECIPITATED SULPHUR.—Made by boiling together sulphur, slaked lime, and water. A solution is thus obtained of sulphide and hyposulphite of calcium. This solution is treated with hydrochloric acid, which throws down the sulphur as a precipitate.

Characters.—Sublimed sulphur is lemon-yellow in colour, and feels gritty. Precipitated sulphur is dull greyish-yellow, and has a soft feel; this kind often contains sulphate of lime. The presence of sulphate of lime is caused by using sulphuric acid instead of hydrochloric, to precipitate the sulphur, the result being that sulphate of lime falls with the sulphur.

To detect the sulphate of lime, burn the sulphur away, and the lime salt remains.

OFFICIAL PREPARATIONS.

Confectio Sulphuris.
Unguentum „
Sulphuris Iodidum.

(Contained in compound liquorice powder.)

Therapeutics.—Sulphur in small doses is a stimulant, in large doses laxative. Used in skin diseases, piles, and bronchitis.

Doses.—Either variety, as a stimulant, 10 to 20 grains; as a laxative, 20 to 60 grains; of confection, ½ to 2 drachms.

PHOSPHORUS. P.

Phosphorus.

Made from bone ash or phosphate of lime, by treatment with sulphuric acid, charcoal, and heat. The operation is carried on in a retort; the acid converts the phosphate of lime into acid-calcium phosphate:—

$$\underset{\text{Phosphate of lime.}}{Ca_3(PO_4)_2} + \underset{\text{Sulphuric acid.}}{2H_2SO_4} = \underset{\text{Acid-calcium phosphate.}}{CaH_4(PO_4)_2} + \underset{\text{Sulphate of lime.}}{2CaSO_4}$$

Heat now reduces the acid-calcium phosphate to calcic metaphosphate:—

$$\underset{\text{Acid-calcium phosphate.}}{CaH_4(PO_4)_2} = \underset{\text{Calcic metaphosphate.}}{Ca(PO_3)_2} + \underset{\text{Water.}}{2H_2O}$$

Finally the carbon exerts a further reduction :—

$$\underset{\text{Calcium metaphosphate.}}{3Ca\,(PO_3)_2} + \underset{\text{Carbon.}}{10C} = \underset{\text{Calcium phosphate.}}{Ca_3\,(PO_4)_2} + \underset{\text{Carbon monoxide.}}{10CO} + \underset{\text{Phosphorus}}{P_4}$$

Characters.—Phosphorus is a wax-like solid, freely soluble in bisulphide of carbon, sparingly soluble in alcohol, ether, and chloroform. Heated with water it renders the steam luminous. Heated to 240° C., in an atmosphere of hydrogen, red or amorphous phosphorus is formed. This variety is insoluble in bisulphide of carbon, and has scarcely any poisonous action. Phosphorus must be kept under water, as it oxidises and takes fire very easily on exposure.

OFFICIAL PREPARATIONS.

Oleum Phosphoratum.
Pilula Phosphori.
Acidum Phosphoricum.

Therapeutics.—Nervine tonic, stimulant, and aphrodisiac. Given in diseases of the brain and nervous system, neuralgia, and eczema.

Dose.—$\frac{1}{40}$ to $\frac{1}{10}$ of a grain; of oil, 3 to 10 minims; of pill, 3 to 10 grains.

ACIDS.

ACIDUM SULPHURICUM. H_2SO_4.

Sulphuric Acid.

Chemically considered, this acid is of the first importance, as it is used in the preparation of nine other official acids.

It is made by burning sulphur, which yields SO_2; this is passed, together with the vapour of nitric peroxide (NO_2), into a leaden chamber, where steam is being injected. Here the gases react as follows: The nitric peroxide gives oxygen to the SO_2, which becomes SO_3, and at once unites with the steam to form sulphuric acid, thus:—

$$SO_2 + O + H_2O = H_2SO_4.$$

Characters.—An oily liquid, having an intense affinity for water, evolving much heat when mixed with it. It chars most organic matter, but does not blacken indigo or strychnia. Heated with carbon it evolves SO_2.

This acid may contain lead and arsenic as impurities; the former from the lead chambers, the latter from the sulphur. In diluting this acid it must be poured slowly into cold water, as there is thus less risk of an accident from suddenly developed heat.

OFFICIAL PREPARATIONS.

Acidum Sulphuricum Aromaticum.

„ „ Dilutum.

Therapeutics.—Refrigerant, tonic, and astringent, used in sweating, diarrhœa, and hæmorrhages.

Dose.—Dilute, or aromatic acid, 5 to 30 minims.

ACIDUM SULPHUROSUM. H_2SO_3.

Sulphurous Acid.

Made by heating carbon with strong sulphuric acid, and passing the evolved gas into water :—

$$\underset{\text{Sulphuric acid.}}{2H_2SO_4} + \underset{\text{Carbon.}}{C} = \underset{\text{Sulphurous acid.}}{2H_2SO_3} + \underset{\text{Carbon dioxide.}}{CO_2}$$

The CO_2 escapes.

Characters.—This acid has a strong odour of burning sulphur; it readily takes oxygen from the air, being converted into sulphuric acid. By the action of chlorine it is at once converted into sulphuric acid.

Therapeutics.—Valuable disinfectant, and largely employed as such; for this purpose it is best made by burning sulphur. Applied locally it is used to destroy vegetable life in parasitic skin diseases. It immediately removes stains of iodine and permanganate of potassium.

Dose.—$\frac{1}{2}$ to 1 drachm in water.

ACIDUM HYDROCHLORICUM. HCl.

Hydrochloric Acid.

Obtained by the action of sulphuric acid on common salt :—

$$\underset{\text{Chloride of sodium.}}{NaCl} + \underset{\text{Sulphuric acid.}}{H_2SO_4} = \underset{\text{Acid sulphate of sodium.}}{NaHSO_4} + \underset{\text{Hydrochloric acid.}}{HCl}$$

Characters.—The official acid is a colourless fuming liquid containing 31·8 per cent. of real HCl. It is liable to contain sulphate and chloride of sodium as impurities, also arsenic and iron. The sodium salts are left as residues on evaporation. Arsenic and iron are found by the usual tests.

Official Preparation.

Acidum Hydrochloricum Dilutum.

Therapeutics.—Caustic, refrigerant, and tonic; given in fevers and dyspepsia.

Dose.—Dilute acid, 5 to 30 minims.

ACIDUM HYDROBROMICUM DILUTUM. HBr.

Diluted Hydrobromic Acid.

Made by passing hydrogen sulphide through bromine placed in water:—

$$\underset{\substack{\text{Hydrogen}\\ \text{sulphide.}}}{H_2S} + \underset{\text{Bromine.}}{2Br} = \underset{\substack{\text{Hydrobromic}\\ \text{acid.}}}{2HBr} + \underset{\text{Sulphur.}}{S}$$

The fluid is filtered and distilled to free it from sulphur compounds, then the distilled acid is diluted with water to a sp. gr. of 1·077.

Characters.—A colourless acid liquid. Treated with chlorine water it liberates bromine. Evaporated it leaves no residue.

Therapeutics.—Soporific, given in epilepsy and nervous diseases.

Dose.—15 to 50 minims.

ACIDUM NITRICUM. HNO_3.

Nitric Acid.

Prepared from nitrate of potash or soda by distilling with sulphuric acid:—

$$\underset{\substack{\text{Nitrate}\\ \text{of potassium.}}}{KNO_3} + \underset{\substack{\text{Sulphuric}\\ \text{acid.}}}{H_2SO_4} = \underset{\substack{\text{Acid sulphate}\\ \text{of potassium.}}}{KHSO_4} + \underset{\substack{\text{Nitric}\\ \text{acid.}}}{HNO_3}$$

Characters.—Nitric acid is a clear liquid, sp. gr. 1·42; it contains 70 per cent. of real HNO_3. Its impurities are sulphuric acid and nitrate of potassium.

OFFICIAL PREPARATION.

Acidum Nitricum Dilutum.

Therapeutics.—Used as a caustic to destroy warty growths. Given internally as a tonic and refrigerant, for fevers, dyspepsia, and liver derangements.

Dose.—Dilute acid, 10 to 30 minims.

ACIDUM NITRO-HYDROCHLORICUM DILUTUM.

Dilute Nitro-Hydrochloric Acid.

Made by mixing 3 parts nitric and 4 parts hydrochloric acid, 25 parts water, and standing fourteen days.

Characters.—A colourless solution, known as Aqua Regia. It possesses the property of dissolving gold. Dr. Tilden has shown it to be a mixture of chloronitric and chlornitrous acid. Nitrous acid and free chlorine are also present.

Therapeutics.—Same as nitric acid.

Dose.—5 to 20 minims.

ACIDUM PHOSPHORICUM CONCENTRATUM. H_3PO_4.

Concentrated Phosphoric Acid.

Made by boiling phosphorus with nitric acid in a retort, until the phosphorus disappears, then concentrating, and adding water, until the acid has a specific gravity of 1·5.

Characters.—A colourless, syrupy liquid, with a sour taste, contains 66·3 per cent. of H_3PO_4. Evaporated it leaves a solid residue of glassy appearance. It may contain nitric acid as an impurity; it is detected by the ordinary tests. Other impurities are metaphosphoric and phosphorous acids; the former gives a precipitate with albumen, the latter with mercuric chloride.

OFFICIAL PREPARATION.

Acidum Phosphoricum Dilutum.

Therapeutics.—Refrigerant tonic and astringent. Useful to prevent the blackening which takes place on mixing iron and digitalis.

Dose.—Concentrated acid, 2 to 5 minims; dilute acid, 10 to 30 minims.

ACIDUM HYDROCYANICUM DILUTUM. HCN.

Dilute Hydrocyanic Acid.

Made by distilling a mixture of ferrocyanide of potassium, sulphuric acid, and water:—

$$\underset{\substack{\text{Ferrocyanide}\\ \text{of potassium.}}}{2K_4FeC_6N_6} + \underset{\substack{\text{Sulphuric}\\ \text{acid.}}}{6H_2SO_4} = \underset{\substack{\text{Hydric potassium}\\ \text{sulphate.}}}{6KHSO_4}$$

$$+ \underset{\substack{\text{Hydrocyanic}\\ \text{acid.}}}{6HCN} + \underset{\substack{\text{Ferrocyanide of}\\ \text{potassium and iron.}}}{FeK_2FeC_6N_6}$$

The distillate of HCN, being of variable strength, has to be diluted with water until, 100 grains or 110 minims, treated with excess of nitrate of silver yields a precipitate (cyanide of silver), which when washed and dried weighs 10 grains, equalling 2 *per cent. of* HCN. The acid is often called prussic acid, and a variety known as "Scheele's" contains about 4 per cent. HCN.

Characters.—Its odour is peculiar, and likened to bitter almonds. Its solution is very volatile and unstable, so that old specimens may be inert. For its preservation it is best kept in inverted stoppered blue bottles.

Official Preparations.

Vapor Acidi Hydrocyanici,

contained in

Tinctura Chloroformi et Morphinæ.

Therapeutics.—Given as a sedative to allay vomiting, and nervous cough, also palpitation of the heart connected with dyspepsia. It is one of the most intense poisons known, killing in a few seconds. It dilates the pupil. As antidotes, artificial respiration, cold affusion, injection of atropine, inhalation of ammonia, administration of freshly-made ferric hydrate, may be employed; but the poison acts so rapidly that it is generally impracticable to use any of them.

Dose.—Dilute acid, 2 to 8 minims.

ACIDUM ACETICUM. $HC_2H_3O_2$.

Acetic Acid.

Obtained from wood by destructive distillation. The distillate consists of tar, and watery liquid, the latter containing acetic acid.

Purification is effected by converting the acid into acetate of sodium or lime, and acting on these with sulphuric acid:—

$$\underset{\text{Acetate of sodium.}}{NaC_2H_3O_2} + \underset{\text{Sulphuric acid.}}{H_2SO_4} = \underset{\text{Acetic acid.}}{HC_2H_3O_2} + \underset{\text{Acid sulphate of sodium.}}{NaHSO_4}$$

Characters.—Known by its vinegar-like odour and taste. Contains 33 per cent. real acid. It is perfectly volatile. It should give no precipitate with sulphuretted hydrogen, nitrate of silver, or chloride of barium; showing absence of metals, chlorides, and sulphates. Warmed with zinc, and HCl, no sulphuretted hydrogen is evolved, showing absence of sulphurous acid.

OFFICIAL PREPARATION.

Acidum Aceticum Dilutum.

Therapeutics.—Sometimes used externally as a rubefacient or irritant; internally as a refrigerant and astringent.

Dose.—Dilute acid, $\frac{1}{2}$ to 2 drachms freely diluted.

ACETUM.

Vinegar.

Prepared by acetous fermentation, from a mixture of malted and unmalted grain.

The acetous ferment is called *Mycoderma aceti.* The process may be thus explained:—

An infusion of malt is allowed to ferment, producing alcohol and carbonic anhydride; the latter escapes, whilst the former, under the influence of the acetous ferment, takes oxygen from the air, changing to acetic acid:—

$$\underset{\text{Alcohol.}}{C_2H_6O} + \underset{\text{Oxygen.}}{O_2} = \underset{\text{Acetic acid.}}{HC_2H_3O_2} + \underset{\text{Water.}}{H_2O}$$

Characters.—A brown-coloured liquid, of a pleasant acetous odour, containing about 5·41 per cent. of real acetic acid. The law allows the addition of $\frac{1}{1000}$ part of sulphuric acid to vinegar as a preservative; this should be removed from 1 ounce of the vinegar by 10 minims of solution of chloride of barium. If more chloride of barium is required it indicates adulteration.

Therapeutics.—Same as acetic acid.

ACIDUM ACETICUM GLACIALE. $HC_2H_3O_2$.

Glacial Acetic Acid.

Made by distilling dry acetate of sodium with strong sulphuric acid. Sulphurous acid is formed during the process, and is removed by shaking with manganese dioxide and redistilling; sulphurous acid is thus converted into sulphuric, and retained by the manganese.

Characters.—This acid contains 99 per cent. of acetic acid.

At ordinary temperature it is a liquid. Cooled to 34° F. it becomes crystalline. Although heavier than water, its specific gravity is increased by adding 10 per cent. of water.

Glacial acetic acid is used in the preparation of acetum cantharidis, creasote mixture, and acetic turpentine liniment.

Therapeutics.—Used as a caustic, irritant, or vesicant, to corns, warts, skin diseases.

ACIDUM TARTARICUM. $H_2C_4H_4O_6$.

Tartaric Acid.

Made from acid tartrate of potassium. The potassium salt is first boiled with carbonate of lime, with the following result :—

$$\underset{\substack{\text{Acid tartrate}\\\text{of potassium.}}}{2KHC_4H_4O_6} + \underset{\substack{\text{Carbonate}\\\text{of lime.}}}{CaCO_3} = \underset{\substack{\text{Tartrate}\\\text{of lime.}}}{CaC_4H_4O_6} +$$

$$\underset{\substack{\text{Tartrate}\\\text{of potassium.}}}{K_2C_4H_4O_6} + \underset{\text{Water.}}{H_2O} + \underset{\substack{\text{Carbonic}\\\text{anhydride.}}}{CO_2}$$

Chloride of calcium is now added, and causes a further precipitate of tartrate of lime :—

$$\underset{\substack{\text{Tartrate of}\\\text{potassium.}}}{K_2C_4H_4O_6} + \underset{\substack{\text{Chloride}\\\text{of calcium.}}}{CaCl_2} = \underset{\substack{\text{Tartrate}\\\text{of calcium.}}}{CaC_4H_4O_6} + \underset{\substack{\text{Chloride of}\\\text{potassium.}}}{2KCl}$$

The tartrate of lime is finally decomposed with sulphuric acid, and the filtered solution evaporated :—

$$\underset{\text{Tartrate of lime.}}{CaC_4H_4O_6} + \underset{\substack{\text{Sulphuric}\\\text{acid.}}}{H_2SO_4} = \underset{\substack{\text{Tartaric}\\\text{acid.}}}{H_2C_4H_4O_6} + \underset{\substack{\text{Sulphate}\\\text{of lime.}}}{CaSO_4}$$

Characters.—Forms oblique rhombic prisms, longer than citric acid. When made neutral with solution of potash, it gives a white precipitate with a solution of chloride of calcium, thus distinguishing it from citric acid. It should give no precipitate with solution of sulphate of calcium or oxalate of ammonium, showing absence of oxalic acid, and lime salts.

Twenty grains neutralise 22 grains of bicarbonate of sodium, or 16 grains of carbonate of ammonium, these being the quantities to prescribe for ordinary effervescing mixtures.

Therapeutics.—Refrigerant, used to allay thirst in fevers. Usually given in the effervescing state.

Dose.—10 to 30 grains.

ACIDUM CITRICUM. $H_3C_6H_5O_7$.

Citric Acid.

Found in the fruits of the lime and lemon, and obtained by adding chalk to boiling lemon juice :—

$$\underset{\text{Citric acid in lemon juice.}}{2H_3C_6H_5O_7} + \underset{\text{Carbonate of lime.}}{3CaCO_3} = \underset{\text{Citrate of lime.}}{Ca_3(C_6H_5O_7)_2} + \underset{\text{Carbonic anhydride.}}{3CO_2} + \underset{\text{Water.}}{3H_2O}$$

The precipitated citrate of lime is now separated and treated with sulphuric acid :—

$$\underset{\text{Citrate of lime.}}{Ca_3(C_6H_5O_7)_2} + \underset{\text{Sulphuric acid.}}{3H_2SO_4} = \underset{\text{Citric acid.}}{2H_3C_6H_5O_7} + \underset{\text{Sulphate of lime.}}{3CaSO_4}$$

It is then filtered, evaporated, and set aside to crystallize.

Characters.—Citric acid forms oblique rhombic, prismatic crystals, distinguished from tartaric acid by being shorter, smaller, and more rounded. Made neutral with solution of potash, it gives no precipitate with chloride of calcium, until boiled.

If 34 to 46 grains of citric acid be dissolved in 1 ounce of water, it resembles lemon juice in strength and properties.

Therapeutics.—Refrigerant, used to allay thirst. Given in the form of effervescing draughts.

Dose.—10 to 30 grains.

ACIDUM OXALICUM. $H_2C_2O_4$.

Oxalic Acid.

Found in the juices of plants, as the wood sorrel, rhubarb, and dock. Commercially it can be made two ways : (1) By the action of nitric acid on sugar ; (2) By roasting sawdust with a mixture of caustic potash and soda, oxalates of the alkalies being formed. Lime is next added with formation of insoluble oxalate of lime ; the insoluble oxalate is collected, and treated with sulphuric acid, when sulphate of lime is precipitated, and oxalic acid passes into solution.

Characters.—It forms crystalline prisms larger than sulphates of zinc or magnesia, smaller than nitrate of potassium. Its taste is acid and pleasant.

It is employed as a chemical test. Frequently taken to destroy life: as antidotes chalk or magnesia may be given, followed by emetics and the stomach pump.

ACIDUM ARSENIOSUM. As_2O_3.

Arsenious Acid.

Obtained as a by-product of the smelting of arsenical ores. It condenses on the cool parts of the furnaces, and is purified by resublimation.

Characters.—Arsenic may be seen in two forms: (1) as a heavy white powder, resisting admixture when shaken with water; (2) white porcelain-like masses, having a stratified appearance. Arsenic slowly sublimed in a test-tube forms minute octahedral crystals. It is very sparingly soluble in water, but dissolves in 10 parts glycerine. Though called an acid, it is truly an anhydride.

OFFICIAL PREPARATIONS.

Liquor Arsenicalis.
„ **Arsenici Hydrochloricus.**
„ **Arsenii et Hydrargyri Iodidi** (*Donovan's solution*).
Sodii Arsenias.
And the latter is used in making
Liquor Sodii Arseniatis.
Ferri Arsenias.

Therapeutics.—Alterative and antiperiodic; given in skin diseases, intermittent fevers, neuralgia, chorea, and pulmonary diseases.

Dose.—Of arsenious acid, $\frac{1}{32}$ to $\frac{1}{12}$ of a grain. Of either solution, 2 to 8 minims. Donovan's solution, 10 to 30 minims.

Antidotes.—Stimulants, emetics, and ferric hydrate.

ACIDUM BENZOICUM. $HC_7H_5O_2$.

Benzoic Acid.

Prepared from resin of benzoin by sublimation. Not chemically pure.

Characters.—Forms light, feathery crystalline plates or needles. Made from benzoin its odour is agreeable and similar to benzoin, the odour depending on the presence of an essential oil; the pure acid is odourless. It is sparingly soluble in water, but freely in alcohol. Benzoic acid is distinguished from cinnamic acid, an allied body, by not yielding oil of bitter almonds, when heated with chromic acid.

OFFICIAL PREPARATION.

Ammoniæ Benzoas.

Also contained in Tinct. Camph. Co., Troch. Acid., Benzoic, Tinct. Opii Ammoniata.

Therapeutics.—Stimulant, expectorant, and diuretic. Rarely given in the free state on account of its insolubility in water. In its passage through the body it is converted into hippurates, and is thus found in the urine.

Dose.—5 to 15 grains.

ACIDUM LACTICUM. $HC_3H_5O_3$.

Lactic Acid.

Obtained by fermenting a mixture of sugar, sour milk, old cheese, and chalk, water being present. At the end of a week lactate of lime is formed; it is separated and decomposed with dilute sulphuric acid.

Characters.—Colourless syrupy liquid of acid taste. Specific gravity 1·21. Mixes with water, alcohol, and ether. Heated it vaporizes, and yields inflammable gas at about 350° F. Warmed with permanganate of potassium it gives the odour of aldehyd.

Official Preparation.

Acidum Lacticum Dilutum.

Therapeutics.—Given in dyspepsia to aid digestion; also used as spray to dissolve false membrane in croup.

Dose.—Dilute acid, ½ to 2 drachms.

ACIDUM MECONICUM. $H_3C_7HO_7$.

Meconic Acid.

May be obtained from meconate of lime, the residue of morphia manufacture, by the action of HCl and heat.

Characters.—Nearly colourless, micaceous crystals, sparingly soluble in water, readily soluble in alcohol. Its solution is coloured dark-red by ferric chloride, the colour being discharged by strong but not by dilute hydrochloric acid.

It is used in making Solution of Bimeconate of Morphia.

ACIDUM OLEICUM. $HC_{18}H_{33}O_2$.

Oleic Acid.

Made by saponifying olive oil with superheated steam.

$$\underset{\text{Glycerine oleate.}}{C_3H_5(\text{Oleate})_3} + \underset{\text{Water.}}{3H_2O} = \underset{\text{Oleic acid.}}{3H\text{Oleate}} + \underset{\text{Glycerine.}}{C_3H_5(HO)_3}$$

The oleic acid is separated from solid fats present, by freezing and pressure.

Characters.—A straw-coloured liquid, nearly odourless and tasteless, and but faintly acid. By keeping and exposure it darkens in colour, and becomes of rancid odour. Sp. gr., 0·860 to 0·890. It unites with the alkaline hydrates to form soaps.

It is employed in making the oleates of mercury and zinc.

ACIDUM CARBOLICUM. C_6H_5HO.

Carbolic Acid.

This substance is also known as phenol, phenic acid, phenic alcohol, and hydrate of phenyl. It is made from heavy coal oil, by fractional distillation.

Characters.—It forms colourless crystals, of peculiar odour, giving a permanent fluid when treated with $\frac{1}{16}$ part of water.

It is freely soluble in alcohol, fats, and oils, and in 16 parts of water. It coagulates albumen, gives a purple colour with perchloride of iron, and a whitish precipitate with bromine water. Its melting-point should not be lower than 91·5 F.

In some respects it resembles creasote, but differs from it in having no action on polarised light.

OFFICIAL PREPARATIONS.

Acidum Carbolicum Liquefactum.
Glycerinum Acidi Carbolici.
Suppositoria „ „ cum Sapone.
Unguentum „ „

Therapeutics.—Caustic and stimulant, mainly valued for its powerful antiseptic properties. It is used in the form of spray to protect wounds during operations, also after operations as a lotion, the usual strength being 1 in 20 or 40 volumes of water. Carbolised gauze plays an important part in Lister's antiseptic method of treatment; the gauze is saturated with a mixture of carbolic acid and paraffin wax.

Internally the acid is given to allay sickness. Poisoning with this acid is rather frequent. The antidotes are white of egg, demulcents, magnesia, or chalk; olive oil is also given.

Dose.—1 to 3 grains.

ACIDUM SALICYLICUM. $HC_7H_5O_3$.

Salicylic Acid.

Made by combining carbolic acid with soda, to form carbolate of sodium. The product is now heated to about 200° C., and dry carbonic anhydride passed through it, when the carbolate of sodium combines with the CO_2, to form salicylate of sodium:—

$$\underset{\substack{\text{Carbolic}\\\text{acid.}}}{HC_6H_5O} + \underset{\substack{\text{Sodium}\\\text{hydrate.}}}{NaHO} = \underset{\substack{\text{Carbolate}\\\text{of sodium.}}}{C_6H_5ONa} + \underset{\text{Water.}}{H_2O}$$

$$\underset{\substack{\text{Carbolate}\\\text{of sodium.}}}{C_6H_5ONa} + \underset{\substack{\text{Carbonic}\\\text{anhydride.}}}{CO_2} = \underset{\substack{\text{Salicylate}\\\text{of sodium.}}}{NaC_7H_5O_3}$$

The salicylate of sodium now treated with hydrochloric acid gives a precipitate of salicylic acid:—

$$\underset{\substack{\text{Salicylate}\\\text{of sodium.}}}{NaC_7H_5O_3} + \underset{\substack{\text{Hydrochloric}\\\text{acid.}}}{HCl} = \underset{\substack{\text{Salicylic}\\\text{acid.}}}{HC_7H_5O_3} + \underset{\substack{\text{Sodium}\\\text{chloride.}}}{NaCl}$$

If potash be substituted for soda in the above process, an entirely different compound is formed.

Characters. — Small, needle-shaped crystals, sparingly soluble in water, freely in alcohol and chloroform. Heated it volatilises, and above its melting-point decomposes into carbolic acid, and carbonic anhydride. Its solution gives with ferric chloride a deep purple colour.

OFFICIAL PREPARATIONS.

Unguentum Acidi Salicylici.
Sodii Salicylas.

Therapeutics.—The acid and its soda salt are valued for the treatment of rheumatic fever; in which fever they have the power of reducing the body's temperature in a marked degree. The acid is a good antiseptic. The ointment is used in skin diseases.

Dose.—Acid, 5 to 30 grains.

BASES AND SALTS.

POTASSIUM. K.

Potassium.

OFFICIAL SALTS.

Carbonate of Potassium.
Bicarbonate ,,
Acetate ,,
Citrate ,,
Cyanide ,,
Tartrate ,,
Acid Tartrate ,,
Chlorate ,,
Permanganate ,,

Hydrate of Potassium.
Bichromate ,,
Yellow Prussiate ,,
Iodide ,,
Bromide ,,
Nitrate ,,
Sulphate ,,
Sulphurated Potash.

POTASSII CARBONAS. K_2CO_3.

Carbonate of Potassium.

Obtained from the ashes of plants, and separated from impurities by lixiviation. It is often called salts of tartar.

Characters.—White deliquescent crystals, alkaline in reaction, caustic, and deliquescent. It contains 16 per cent. of water, also traces of sulphates and chlorides.

Therapeutics.—Used as an antacid. It renders the urine alkaline.

Dose.—10 to 20 grains.

POTASSII BICARBONAS. $KHCO_3$.

Bicarbonate of Potassium.

Made by passing carbonic anhydride through a solution of carbonate of potassium.

$$\underset{\text{Carbonate of potassium.}}{K_2CO_3} + \underset{\text{Carbonic anhydride.}}{CO_2} + \underset{\text{Water.}}{H_2O} = \underset{\text{Bicarbonate of potassium.}}{2KHCO_3}$$

Characters.—Rhombic prisms of cool saline taste, distinguished from carbonate of potassium by giving no precipitate with sulphate of magnesium.

20 grains neutralize, 14 grains citric, or 15 grains tartaric acid.

OFFICIAL PREPARATION.

Liquor Potassæ Effervescens.

Therapeutics.—Given in dyspepsia and thirst as an antacid and refrigerant, also employed in rheumatism and diseases of the urinary organs.

Dose.—10 to 30 grains.

POTASSII ACETAS. $KC_2H_3O_2$.

Acetate of Potassium.

Made by adding acetic acid in slight excess, to carbonate of potassium, then evaporating to dryness. The mass is finally fused at a gentle heat, and allowed to cool.

$$\underset{\text{Carbonate of potassium.}}{K_2CO_3} + \underset{\text{Acetic acid.}}{2HC_2H_3O_2} = \underset{\text{Acetate of potassium.}}{2KC_2H_3O_2} + \underset{\text{Carbonic anhydride.}}{CO_2} + \underset{\text{Water.}}{H_2O}$$

Characters.—Foliated satiny masses, very deliquescent and soluble in water.

Its odour is peculiar and somewhat unpleasant.

Therapeutics.—Diuretic and purgative, used in skin diseases, rheumatism, and renal dropsy.

Dose.—10 to 60 grains as a diuretic; 2 drachms as a purgative.

POTASSII CITRAS. $K_3C_6H_5O_7$.

Citrate of Potassium.

Made by neutralising carbonate of potassium with citric acid, and evaporating to dryness :—

$$\underset{\text{Citric acid.}}{2H_3C_6H_5O_7} + \underset{\substack{\text{Carbonate}\\\text{of potassium.}}}{3K_2CO_3} = \underset{\substack{\text{Citrate of}\\\text{potassium.}}}{2K_3C_6H_5O_7} + \underset{\text{Water.}}{3H_2O} + \underset{\substack{\text{Carbonic}\\\text{anhydride.}}}{3CO_2}$$

Therapeutics.—Diuretic, antacid, and antiscorbutic, given in rheumatism, scurvy, and diseases of the urinary organs.

Dose.—20 to 60 grains.

POTASSII CYANIDUM. KCN.

Cyanide of Potassium.

Prepared by heating ferrocyanide of potassium to redness, until gas ceases to be evolved. The mass is kept fused, when a black sediment of charcoal and iron falls, from which the clear fluid is poured. To purify the cyanide, it may be crystallised from alcohol.

Characters.—White opaque masses, smelling of hydrocyanic acid, and evolving that acid when treated with the mineral acids. It contains about 95 per cent. of real KCN, the rest being mainly carbonate of potassium and water.

Used officially for the purification of bismuth.

POTASSII TARTRAS. $K_2C_4H_4O_6$.

Tartrate of Potassium.

This salt is prepared by neutralising a hot solution of carbonate of potassium, with acid tartrate of potassium :—

$$\underset{\substack{\text{Acid tartrate}\\\text{of potassium.}}}{2KHC_4H_4O_6} + \underset{\substack{\text{Carbonate}\\\text{of potassium.}}}{K_2CO_3} = \underset{\substack{\text{Tartrate}\\\text{of potassium.}}}{2K_2C_4H_4O_6} + \underset{\text{Water.}}{H_2O} + \underset{\substack{\text{Carbonic}\\\text{anhydride.}}}{CO_2}$$

Therapeutics.—Diuretic and purgative.

Dose.—10 to 60 grains as a diuretic; $\frac{1}{4}$ to $\frac{1}{2}$ an ounce as a purgative.

POTASSII TARTRAS ACIDA. $KHC_4H_4O_6$.

Acid Tartrate of Potassium.

This salt, commonly called cream of tartar, is obtained from argol, a deposit found on the interior of wine casks. The argol is purified by boiling with water, charcoal, and clay; on filtering the solution and cooling, the potassium salt deposits as crystals.

Characters.—It forms nearly white crystalline cauliflower-like masses, but is most often seen as a fine white powder. It has a pleasant acid taste, is but sparingly soluble in water, insoluble in alcohol. A small amount of lime is found in it as an impurity.

Acid tartrate of potassium is used in the following:—

Acidum Tartaricum.
Antimonium Tartaratum.
Confectio Sulphuris.
Ferrum Tartaratum.
Potassii Tartras.
Pulvis Jalapæ Co.
Soda Tartarata.

Therapeutics.—Refrigerant, diuretic, and purgative. Employed as a cooling drink in dropsies and fevers. Frequently given in large doses with pulv. jalap. co., thus acting as a useful hydragogue purgative.

Dose.—As a diuretic or refrigerant, 20 to 60 grains; as a purgative, 2 to 4 drachms.

POTASSII CHLORAS. $KClO_3$.

Chlorate of Potassium.

Originally made by passing chlorine into a hot solution of potash:—

$$\underset{\substack{\text{Potassium}\\\text{hydrate.}}}{6KHO} + \underset{\text{Chlorine.}}{6Cl} = \underset{\substack{\text{Potassium}\\\text{chloride.}}}{5KCl} + \underset{\substack{\text{Potassium}\\\text{chlorate.}}}{KClO_3} + \underset{\text{Water.}}{3H_2O}$$

Here five-sixths of the potassium is rendered almost useless, by forming chloride, which has a limited use.

It is now made, by acting on a mixture of carbonate of potassium and slaked lime, with chlorine :—

$$\underset{\text{Carbonate of potassium.}}{K_2CO_3} + \underset{\text{Calcium hydrate.}}{6Ca2HO} + \underset{\text{Chlorine.}}{12Cl} = \underset{\text{Chlorate of potassium.}}{2KClO_3} + \underset{\text{Chloride of calcium.}}{5CaCl2} +$$

$$\underset{\text{Carbonate of calcium.}}{CaCO_3} + \underset{\text{Water.}}{6H_2O}$$

Characters.—Forms rhomboidal plates, closely resembling bicarbonate of potassium, but generally more opaque. Heated it gives off oxygen, and leaves a residue of chloride. One part is soluble in about 18 parts of water ; for this reason scarcely more than 20 grains should be ordered in an ounce of water, as excess would remain insoluble.

Official Preparation.

Trochisci Potassii Chloratis.

Therapeutics.—Refrigerant and diuretic ; acts powerfully on the mucous membranes ; hence is found useful as a gargle in tonsillitis and sore mouth. Given in fevers.

Dose.—10 to 30 grains. Lozenges, 1 to 6 daily.

POTASSII PERMANGANAS. $KMnO_4$.

Permanganate of Potassium.

Chlorate of potash, caustic potash, and manganese dioxide are heated together, when a green mass of manganate of potassium is formed. The manganate of potassium is treated by boiling with water till the colour changes to purple, and the permanganate is formed :—

$$\underset{\text{Caustic potash.}}{6KHO} + \underset{\text{Chlorate of potassium.}}{KClO_3} + \underset{\text{Oxide of manganese.}}{3MnO_2} = \underset{\text{Manganate of potassium.}}{3K_2MnO_4} + \underset{\text{Water.}}{3H_2O}$$

$$\underset{\text{Manganate of potassium.}}{3K_2MnO_4} + \underset{\text{Water.}}{2H_2O} = \underset{\text{Permanganate of potassium.}}{2KMnO_4} + \underset{\text{Caustic potash.}}{4KHO} + \underset{\text{Manganese oxide.}}{MnO_2}$$

Characters.—Forms dark prismatic crystals, a grain of which imparts a fine purple colour to a gallon of distilled water; this colour is rapidly destroyed by the presence of organic matter, changing to a brown. On account of this property, it is incompatible with all vegetable products, including glycerine and alcohol. A solution of this salt is sold by the name of "Condy's Fluid."

Official Preparation.

Liquor Potassii Permanganatis.

Therapeutics.—Antiseptic and deodorant, much valued as a disinfectant. Used as a gargle in mouth and throat diseases, and to destroy the odour of bad breath; also used as an injection in vaginal disorders.

Dose.—1 to 5 grains. For a mouth wash or injection, 5 grains to a pint of water. For keeping in bed pans, 20 grains to a pint of water.

POTASSA SULPHURATA.

Sulphurated Potash.

Sulphurated potash is made by heating in a crucible, a mixture of sulphur and carbonate of potassium, until the mass fuses and becomes dull-red; it is then poured on to a cold stone surface, and covered to prevent access of air; solidification then takes place. The compound formed is a mixture of sulphide and hyposulphite of potassium.

$$\underset{\substack{\text{Carbonate}\\\text{of potassium.}}}{3K_2CO_3} + \underset{\text{Sulphur.}}{8S} = \underset{\substack{\text{Hyposulphite}\\\text{of potassium.}}}{K_2S_2O_3} + \underset{\substack{\text{Sulphide}\\\text{of potassium.}}}{2K_2S_3} + \underset{\substack{\text{Carbonic}\\\text{acid gas.}}}{3CO_2}$$

Characters.—Forms solid, dull-green masses, the freshly broken surfaces of which are liver-coloured. Its solution in water is yellow, and smells of sulphuretted hydrogen, which gas it evolves freely on addition of hydrochloric acid, at the same time depositing sulphur.

OFFICIAL PREPARATION.

Unguentum Potassæ Sulphuratæ.

Therapeutics.—Stimulant and diaphoretic; used in skin diseases, and bronchitis. Extensively used in the form of bath, for the cure of scabies.

Dose.—3 to 6 grains in pill; for a bath, 4 oz. to 3 gallons of water.

POTASSII BICHROMAS. $K_2Cr_2O_7$.

Bichromate of Potassium.

Made by roasting chrome iron stone with carbonate of potassium and nitrate of potassium; yellow chromate of potassium is thus formed (K_2CrO_4). This treated with sulphuric acid yields the red or bichromate of potassium.

Characters.—It is a powerful oxidising agent. Treated with sulphuric acid it gives chromic acid (H_2CrO_4).

It is used officially in making chromic acid, and valerianate of sodium; likewise employed as a test for strychnine.

POTASSII FERROCYANIDUM. $K_4Fe(CN)_6 3H_2O$.

Ferrocyanide of Potassium.

Obtained by fusing the cuttings of horns, hoofs, and skins, with carbonate of potassium and iron. The crude product is dissolved in water and crystallised.

Characters.—Large amber-yellow crystals. Heated with strong sulphuric acid it evolves carbon monoxide; if much water be present it gives off hydrocyanic acid. This salt is not a poison, but has aperient properties.

It is used in making hydrocyanic acid and cyanide of potassium.

POTASSA CAUSTICA. KHO.

Caustic Potash.

Made by boiling carbonate of potassium with slaked lime and water. The clear solution is evaporated, and poured into moulds to form solid sticks:—

$$\underset{\text{Hydrate of calcium.}}{Ca(HO)_2} + \underset{\text{Carbonate of potassium.}}{K_2CO_3} = \underset{\text{Caustic potash.}}{2KHO} + \underset{\text{Carbonate of calcium.}}{CaCO_3}$$

Liquor Potassæ.

This solution is made as above without evaporation (*vide* solutions).

Characters.—Caustic potash occurs in white pencils or cakes, powerfully alkaline and corrosive. It absorbs CO_2 readily from the air; hence should be kept in well-closed vessels.

Solution of potash contains 27 grains of the hydrate in the fluid ounce.

Therapeutics.—Used as a caustic, to ulcers, and foreign growths. Taken in large doses it is poisonous; in small doses antacid, and diuretic. Employed in scrofula, dyspepsia, rheumatism, fatty tumours, and bladder diseases.

Dose.—Liquor, 10 to 60 minims.

POTASSII IODIDUM. KI.

Iodide of Potassium.

Prepared by adding iodine to caustic potash, when the following change results:—

$$\underset{\text{Iodine.}}{6I} + \underset{\text{Caustic potash.}}{6KHO} = \underset{\text{Iodide of potassium.}}{5KI} + \underset{\text{Iodate of potassium.}}{KIO_3} + \underset{\text{Water.}}{3H_2O}$$

The mixture is now heated with carbon, when the oxygen of the iodate is carried off as carbon monoxide:—

$$\underset{\text{Iodate of potassium.}}{KIO_3} + \underset{\text{Carbon.}}{3C} = \underset{\text{Iodide of potassium.}}{KI} + \underset{\text{Carbon monoxide.}}{3CO}$$

Characters.—It forms whitish cubical crystals, without odour if pure, but it generally smells of free iodine. It should be neutral, but is frequently alkaline, from traces of carbonate of potassium, added to cause the separation of fine white crystals. Tartaric acid and starch added to a solution, should not give a blue colour, showing absence of iodate of potassium. If iodate of potassium be present, a blue colour is produced. If carbonates be present, they give a white precipitate with lime water.

The B. P. provides no test for the presence of bromide in iodide of potassium, although a probable impurity. Attfield states, bromine can be detected, by treating a solution of the suspected iodide, with a mixed solution of ferrous and cupric sulphates, which throw down the iodine as cuprous iodide; the clear solution now treated with sulphuric acid, and oxide of manganese, would evolve the bromine if present.

Official Preparations.

Unguentum Potassii Iodidi.

Linimentum Potassii Iodidi cum Sapone.

Therapeutics.—Iodide of potassium is a powerful alterative, used in scrofula, glandular enlargements, and syphilitic diseases, also in skin affections, rheumatism, and gout. It is used to eliminate mercury from the system after treating syphilis; also lead, from lead poisoning. The ointment and liniment are applied externally, to glandular swellings, and skin diseases.

Dose.—5 to 20 grains. As much as 60 grains is sometimes given, by gradually increasing the dose.

POTASSII BROMIDUM. KBr.

Bromide of Potassium.

This salt is made exactly the same way as the iodide of potassium, using bromine instead of iodine :—

$$\underset{\text{Bromine.}}{6\mathrm{Br}} + \underset{\text{Caustic potash.}}{6\mathrm{KHO}} = \underset{\text{Bromide of potassium.}}{5\mathrm{KBr}} + \underset{\text{Bromate of potassium.}}{\mathrm{KBrO_3}} + \underset{\text{Water.}}{3\mathrm{H_2O}}$$

Charcoal is added, and heat applied; thus the bromate is converted into bromide :—

$$\underset{\text{Bromate of potassium.}}{\mathrm{KBrO_3}} + \underset{\text{Carbon.}}{3\mathrm{C}} = \underset{\text{Bromide of potassium.}}{\mathrm{KBr}} + \underset{\text{Carbon monoxide.}}{3\mathrm{CO}}$$

Characters.—It forms whitish cubical crystals, resembling those of iodide of potassium; but, as met with in commerce, generally smaller, and having less odour. It is less soluble in water than iodide of potassium.

Bromide of potassium may contain bromate as an impurity; the bromate is detected by its giving a brown colour, with tartaric acid and starch.

Therapeutics.—Alterative, sedative, and soporific; chiefly employed for epilepsy, diseases of the nervous system; such as chorea, hysteria, and spasmodic asthma; also in delirium tremens, and throat affections.

Dose.—10 to 30 grains.

POTASSII NITRAS. $\mathrm{KNO_3}$.

Nitrate of Potassium.

This salt, known as nitre and saltpetre, is found in certain soils in India, together with nitrate of lime. The lime is removed by adding carbonate of potassium; carbonate of lime being deposited: the nitrate of potassium solution is evaporated and crystallised.

Characters.—Forms striated, six-sided prisms of a cool saline taste, freely soluble in water. Strongly heated it deflagrates, evolving oxygen, leaving a residue of potassium nitrite.

OFFICIAL PREPARATION.

Argenti et Potassii Nitras.

Therapeutics.—Refrigerant, diuretic, and vascular sedative. Given in rheumatism, renal dropsy, and fevers.

Dose.—10 to 30 grains of the nitrate.

POTASSII SULPHAS. K_2SO_4.

Sulphate of Potassium.

Made from acid sulphate of potassium, the residue of nitric acid manufacture, thus:—

$$2KHSO_4 + K_2CO_3 = 2K_2SO_4 + CO_2 + H_2O$$

$2KHSO_4$	K_2CO_3	$2K_2SO_4$	CO_2	H_2O
Acid sulphate of potassium.	Carbonate of potassium.	Sulphate of potassium.	Carbon dioxide.	Water.

Characters.—It forms hard, roundish crystals, which are six-sided prisms, terminated by six-sided pyramids. It is sparingly soluble in water.

Sulphate of potassium forms an ingredient of, Compound Ipecacuanha Powder, and Compound Colocynth Pill.

Therapeutics.—Mild purgative, and alterative.

Dose.—15 to 60 grains.

SODIUM. Na.

Sodium.

OFFICIAL SALTS.

Chloride of Sodium.
Carbonate of Sodium.
Bicarbonate of Sodium.
Hydrate of Sodium.
Arseniate of Sodium.
Effervescing Citro Tartrate of Sodium.
Tartarated Soda.
Chlorinated Soda (solution).
Nitrate of Sodium.
Biborate of Sodium.
Sulphite of Sodium.
Hyposulphite of Sodium.
Sulphate of Sodium.
Sulphocarbolate of Sodium.
Ethylate of Sodium.
Iodide of Sodium.
Bromide of Sodium.
Salicylate of Sodium.
Phosphate of Sodium.
Valerianate of Sodium.
Hypophosphite of Sodium.

The metal is official, and should be kept in well-stoppered bottles under mineral naphtha.

Characters of Sodium.—A soft metal, easily cut, showing a bright metallic surface, which at once tarnishes from oxidation. Added to water or alcohol hydrogen gas is evolved, and the sodium disappears.

Uses.—Employed for making solution of ethylate of sodium.

SODII CHLORIDUM. $NaCl$.

Chloride of Sodium.

Common salt is the chief source of the sodium compounds. It is found in sea water, also abundantly in the crystalline state, as rock salt.

Therapeutics.—Of great value as an article of diet, likewise a good antiseptic. Given dissolved in warm water, it is a useful emetic. It destroys thread worms.

Dose.—2 to 4 drachms as an emetic.

SODII CARBONAS. $Na_2CO_3 10H_2O$.

Carbonate of Sodium.

Commonly called soda or washing soda.

Formerly obtained from the ashes of sea plants; now nearly all made from common salt, by the following, known as the salt cake, or Le Blanc, process:—

1st Stage. Salt and sulphuric acid are heated together, sulphate of sodium and hydrochloric acid being produced:—

$$\underset{\text{Chloride of sodium.}}{2NaCl} + \underset{\text{Sulphuric acid.}}{H_2SO_4} = \underset{\text{Sulphate of sodium.}}{Na_2SO_4} + \underset{\text{Hydrochloric acid.}}{2HCl}$$

2nd Stage. The sulphate of sodium is reduced to sulphide, by heating with carbon:—

$$\underset{\text{Sulphate of sodium.}}{Na_2SO_4} + \underset{\text{Carbon.}}{4C} = \underset{\text{Sulphide of sodium.}}{Na_2S} + \underset{\text{Carbon. monoxide.}}{4CO}$$

3rd Stage. The sulphide of sodium is converted into carbonate, by heating with chalk:—

$$\underset{\text{Sodium sulphide.}}{Na_2S} + \underset{\text{Calcium carbonate.}}{CaCO_3} = \underset{\text{Sodium carbonate.}}{Na_2CO_3} + \underset{\text{Calcium sulphide.}}{CaS}$$

Characters.—It forms crystals which are oblique rhombic prisms, transparent when fresh, but they speedily effloresce, becoming white on the surface. Heated it leaves 63 per cent. of its weight. It almost always contains chlorides and sulphates as impurities.

SODII CARBONAS EXSICATA.

Dried Carbonate of Sodium.

Made by heating the carbonate of sodium until deprived of its water of crystallisation.

Therapeutics.—Antacid and stomachic, given in dyspepsia and flatulence.

Dose.—10 to 30 grains; of the dried, 5 to 15 grains.

SODII BICARBONAS. $NaHCO_3$.

Bicarbonate of Sodium.

Made by passing carbonic gas over crystals of carbonate of sodium. Or by reaction between chloride of sodium and bicarbonate of ammonium.

$$\underset{\substack{\text{Carbonate}\\\text{of sodium.}}}{Na_2CO_3} + \underset{\substack{\text{Carbonic}\\\text{acid gas.}}}{CO_2} + \underset{\text{Water.}}{H_2O} = \underset{\substack{\text{Bicarbonate}\\\text{of sodium.}}}{2NaHCO_3}$$

Characters.—Occurs as a white powder, or small irregular scales. It is known from carbonate of sodium, by its solution giving no precipitate, with sulphate of magnesium.

OFFICIAL PREPARATIONS.

Liquor Sodæ Effervescens.
Trochisci Sodii Bicarbonatis.

Therapeutics.—Same as the carbonate, more commonly used, and is generally preferred.

20 grains neutralize 16·7 grains citric acid.
„ „ 17·8 „ tartaric acid.

Dose.—10 to 60 grains. Lozenges, 1 to 6.

SODII CITRO-TARTRAS EFFERVESCENS.

Effervescent Citro-tartrate of Sodium.

Made by mixing powders of sugar, bicarbonate of sodium, citric and tartaric acids; then heating the mixture till it aggregates and assumes a granular form. Finally it is sifted, and preserved in well-closed bottles.

Therapeutics.—A mild saline purgative, pleasant to take.
Dose.—1 to 2 drachms.

SODII CAUSTICA. $NaHO$.

Caustic Soda.

Hydrate of sodium is made thus :—

$$\underset{\substack{\text{Carbonate}\\\text{of sodium.}}}{Na_2CO_3} + \underset{\substack{\text{Hydrate}\\\text{of calcium.}}}{Ca2HO} = \underset{\substack{\text{Hydrate}\\\text{of sodium.}}}{2NaHO} + \underset{\substack{\text{Carbonate}\\\text{of calcium.}}}{CaCO_3}$$

The solution is evaporated, and moulded into sticks.

Characters.—White solid masses or sticks, very alkaline, corrosive, and deliquescent. Freely soluble in water, and readily absorbing CO_2 from the air.

LIQUOR SODÆ.

Solution of Soda.

Made same as the preceding, and of such a strength that it contains 18·8 grains of the hydrate in each fluid ounce (*vide* solutions).

Therapeutics.—Caustic soda is used locally as a caustic. Solution of soda as a diuretic and antacid. Rarely given internally.

SODA TARTARATA. $KNaC_4H_4O_64H_2O$.

Tartarated Soda.

Made by adding cream of tartar to a hot solution of carbonate of sodium, till the solution is neutral. On evaporation, crystals are obtained. It is called Rochelle salt.

$$\underset{\substack{\text{Acid tartrate}\\\text{of potassium.}}}{2KHC_4H_4O_6} + \underset{\substack{\text{Carbonate}\\\text{of sodium.}}}{Na_2CO_3} = \underset{\substack{\text{Tartarated}\\\text{soda.}}}{2KNaC_4H_4O_6} +$$

$$\underset{\text{Water.}}{H_2O} + \underset{\substack{\text{Carbonic}\\\text{acid gas.}}}{CO_2}$$

Characters.—Forms large colourless prisms, or halves of prisms, generally eight-sided, and tasting like common salt. It reacts both as a potassium and sodium salt.

Therapeutics.—Mild saline purge, and diuretic. Forms the principal ingredient of Seidlitz powders.

Dose.—30 to 60 grains as a diuretic; $\frac{1}{4}$ to $\frac{1}{2}$ an ounce as a purgative.

LIQUOR SODÆ CHLORINATÆ. $NaClO,NaCl$.

Solution of Chlorinated Soda.

It is made by adding a solution of carbonate of sodium to a solution of chlorinated lime:—

$$\underset{\text{Chlorinated lime.}}{Ca(ClO)_2, CaCl_2} + \underset{\text{Sodium carbonate.}}{2Na_2CO_3} = \underset{\text{Chlorinated soda.}}{2NaClO, 2NaCl} + \underset{\text{Calcium carbonate.}}{2CaCO_3}$$

Characters.—A colourless alkaline fluid, with a feeble odour of chlorine, which it evolves on addition of HCl. It contains $2\frac{1}{2}$ per cent., of available chlorine.

Therapeutics.—Antiseptic, and stimulant. Applied to fetid sores, also used as a gargle in ulcerated throats and mouths.

Dose.—10 to 30 minims in an ounce of water; same strength as gargle.

SODII BIBORAS. $Na_2B_4O_7 10H_2O$.

Biborate of Sodium.

Borax is chiefly made by boiling together, in proper quantities, boric acid, and carbonate of sodium.

Characters.—Six-sided, flattened prisms, of alkaline reaction, and soft saline taste. A strong solution treated with any of the mineral acids, lets fall scaly crystals of boric acid.

OFFICIAL PREPARATIONS.

Glycerinum Boracis.
Mel Boracis.

Therapeutics.—Local sedative and antiseptic, used in cases of aphthæ, sore mouth or throat. Used as an eye lotion.

Dose.—5 to 40 grains.

SODII HYPOSULPHIS. $Na_2S_2O_35H_2O$.

Hyposulphite of Sodium.

This salt is found in the appendix of the Pharmacopœia, and used as a chemical test.

SODII SULPHIS. $Na_2SO_37H_2O$.

Sulphite of Sodium.

Made by adding sulphurous acid to carbonate of sodium, and crystallising :—

$$\underset{\substack{\text{Sulphurous}\\\text{acid.}}}{H_2SO_3} + \underset{\substack{\text{Carbonate}\\\text{of sodium.}}}{Na_2CO_3} = \underset{\substack{\text{Sulphite}\\\text{of sodium.}}}{Na_2SO_3} + \underset{\substack{\text{Carbonic}\\\text{acid gas.}}}{CO_2} + \underset{\text{Water.}}{H_2O}$$

Characters.—Colourless prismatic crystals, of cool sulphurous taste. Freely soluble in water, and giving off SO_2 when treated with hydrochloric acid.

Therapeutics.—Antiseptic. Given occasionally in enteric fever, and septic fevers, also to check sarcinous vomiting.

Dose.—5 to 20 grains.

SODII SULPHAS. $Na_2SO_410H_2O$.

Sulphate of Sodium.

Obtained from the residue left in the manufacture of hydrochloric acid from salt, by making it neutral with carbonate of sodium :—

$$\underset{\substack{\text{Acid sulphate}\\\text{of sodium.}}}{2NaHSO_4} + \underset{\substack{\text{Carbonate}\\\text{of sodium.}}}{Na_2CO_3} = \underset{\substack{\text{Sulphate}\\\text{of sodium.}}}{2Na_2SO_4} + \underset{\text{Water.}}{H_2O} + \underset{\substack{\text{Carbon}\\\text{dioxide.}}}{CO_2}$$

Characters.—This salt, known as Glauber's salt, forms six-sided prisms, efflorescing on exposure to the air. Heated it loses 55·9 per cent. of water.

Therapeutics.—Purgative and diuretic; employed in constipation, biliousness, and febrile conditions. It is the principal ingredient of Cheltenham and Carlsbad salts.

Dose.—$\frac{1}{4}$ to 1 ounce.

SODII NITRAS. $NaNO_3$.

Nitrate of Sodium.

Often called cubic nitre. Found native in Chili and Peru, and purified by crystallisation from water.

It is used officially, as an oxidising agent, in the manufacture of arseniate of sodium.

SODII PHOSPHAS. $Na_2HPO_4 12H_2O$.

Phosphate of Sodium.

Made by digesting bone ash with sulphuric acid, filtering and adding to the solution, carbonate of sodium, again filtering, and evaporating till crystals form.

Characters.—Colourless rhombic prisms, faintly alkaline, freely soluble in water. Gives with silver nitrate a yellow precipitate. Heated to redness it is changed to pyrophosphate of sodium, now giving a white precipitate with silver nitrate.

Therapeutics.—Used as a purgative and diuretic.

Dose.—$\frac{1}{4}$ to 1 ounce.

SODII HYPOPHOSPHIS. $NaPH_2O_2$.

Hypophosphite of Sodium.

Made by adding carbonate of sodium, to a solution of hypophosphite of lime, and evaporating:—

$$\underset{\text{Calcium hypophosphite.}}{Ca(PH_2O_2)_2} + \underset{\text{Sodium carbonate.}}{Na_2CO_3} = \underset{\text{Calcium carbonate.}}{CaCO_3} + \underset{\text{Sodium hypophosphite.}}{2NaPH_2O_2}$$

Characters.—A white, granular-looking salt, having a bitter taste. Heated it evolves spontaneously inflammable phosphuretted hydrogen. It is deliquescent, and very soluble in water.

Therapeutics.—Nervine tonic, alterative, and stimulant; given in nervous depression, and debility.

Dose.—5 to 10 grains.

SODII VALERIANAS. $NaC_5H_9O_2$.

Valerianate of Sodium.

To obtain this salt, valerianic acid is first made, by distilling a mixture of amylic alcohol, sulphuric acid, and bichromate of potassium. The distilled liquid is now saturated with caustic soda :—

$$\underset{\text{Valerianic acid.}}{HC_5H_9O_2} + \underset{\text{Caustic soda.}}{NaHO} = \underset{\text{Valerianate of sodium.}}{NaC_5H_9O_2} + \underset{\text{Water.}}{H_2O}$$

Characters.— White masses, of powerful valerian-like odour, soluble both in alcohol and water.

Therapeutics.—Stimulant and antispasmodic, given in nervous diseases.

Dose.—1 to 5 grains.

SODII SULPHOCARBOLAS. $NaC_6H_5SO_4 2H_2O$.

Sulphocarbolate of Sodium.

Made by adding sulphuric acid to carbolic acid, to form sulphocarbolic acid. Excess of sulphuric acid is now removed by shaking with carbonate of barium and filtering. The filtrate is treated with carbonate of sodium, which gives carbonate of barium and sulphocarbolate of sodium, the latter being in solution.

$$\underset{\text{Barium sulphocarbolate.}}{Ba(C_6H_5SO_4)_2} + \underset{\text{Sodium carbonate.}}{Na_2CO_3} = \underset{\text{Sodium sulphocarbolate.}}{2NaC_6H_5SO_4} + \underset{\text{Barium carbonate.}}{BaCO_3}$$

Characters.—Colourless prisms, inodorous, with a cool saline and bitter taste, soluble in water. Heated it gives off vapours of carbolic acid. A dilute solution is rendered violet on adding ferric chloride.

Therapeutics.—Antiseptic; given in fevers, and septic conditions of the blood.

Dose.—10 to 15 grains.

SODII ETHYLATIS (LIQUOR). NaC_2H_5O.

Solution of Ethylate of Sodium.

Made by adding sodium, to ethylic alcohol:—

$$\underset{\text{Sodium.}}{Na} + \underset{\text{Alcohol.}}{C_2H_5OH} = \underset{\text{Sodium ethylate.}}{NaC_2H_5O} + \underset{\text{Hydrogen.}}{H}$$

Characters.—A clear, syrupy liquid, changing brown by keeping; hence should be freshly made as wanted. It contains 17 per cent. of real sodium ethylate.

Therapeutics.—Used locally, as a mild caustic, to remove warty and other growths.

SODII BROMIDUM. NaBr.

Bromide of Sodium.

Made by adding bromine to caustic soda, and heating the product to redness with carbon:—

$$\underset{\text{Bromine.}}{6Br} + \underset{\substack{\text{Sodium.}\\\text{hydrate.}}}{6NaHO} = \underset{\substack{\text{Sodium}\\\text{bromide.}}}{5NaBr} + \underset{\substack{\text{Sodium}\\\text{bromate.}}}{NaBrO_3} + \underset{\text{Water.}}{3H_2O}$$

$$\underset{\substack{\text{Sodium}\\\text{bromate.}}}{NaBrO_3} + \underset{\text{Carbon.}}{3C} = \underset{\substack{\text{Sodium}\\\text{bromide.}}}{NaBr} + \underset{\substack{\text{Carbon}\\\text{monoxide.}}}{3CO}$$

Characters.—A granular, white salt, slightly deliquescent, freely soluble in water. A solution of the salt mixed with mucilage of starch, and a few drops of chlorine water, does not give any blue colour, showing absence of iodine.

Therapeutics.—Alterative, sedative, and soporific, given in nervous affections, such as epilepsy, and chorea.

Dose.—10 to 30 grains.

SODII IODIDUM. NaI.

Iodide of Sodium.

Made same as bromide of sodium, using iodine instead of bromine. The reaction is a parallel one.

Characters.—A dry, white, deliquescent powder, freely soluble in water and spirit. Tartaric acid and starch added to its solution, does not develop a blue colour, showing absence of iodate of potassium. If carbonates be present, they give a white precipitate with lime water.

Therapeutics.—Same as iodide of potassium, but milder in action; powerful alterative.

Dose.—5 to 15 grains.

SODII ARSENIAS. $Na_2HAsO_4 7H_2O$.

Arseniate of Sodium.

Made by heating to redness, a mixture of arsenious acid, nitrate of sodium, and carbonate of sodium. The fused mass is dissolved in water, and set aside to crystallise.

$$\underset{\text{Arsenic.}}{As_2O_3} + \underset{\substack{\text{Nitrate}\\\text{of sodium.}}}{2NaNO_3} + \underset{\substack{\text{Carbonate}\\\text{of sodium.}}}{Na_2CO_3} = \underset{\substack{\text{Pyroarseniate}\\\text{of sodium.}}}{Na_4As_2O_7} + \underset{\substack{\text{Nitrous}\\\text{anhydride.}}}{N_2O_3} + \underset{\substack{\text{Carbon}\\\text{dioxide.}}}{CO_2}$$

On adding water to the pyroarseniate it becomes arseniate thus :—

$$\underset{\substack{\text{Pyroarseniate}\\\text{of sodium.}}}{Na_4As_2O_7} + \underset{\text{Water.}}{H_2O} = \underset{\substack{\text{Arseniate}\\\text{of sodium.}}}{2Na_2HAsO_4}$$

Characters.—Transparent prisms, soluble in water forming an alkaline solution. Fresh crystals contain $12H_2O$; this is entirely driven off at 300 F. Fresh crystals exposed to the air effloresce, leaving a salt with $7H_2O$.

OFFICIAL PREPARATION.

Liquor Sodii Arseniatis.

Therapeutics.—Alterative in skin diseases ; antiperiodic in intermittent fever and neuralgia, used also in chorea and pulmonary diseases.

Dose.—$\frac{1}{16}$ to $\frac{1}{8}$ grain ; of solution, 3 to 8 minims.

SODII SALICYLAS. $(NaC_7H_5O_3)_2,H_2O$.

Salicylate of Sodium.

Obtained by the action of salicylic acid on carbonate of sodium, or on caustic soda :—

$$\underset{\text{Salicylic acid.}}{HC_7H_5O_3} + \underset{\text{Sodium hydrate.}}{NaHO} = \underset{\text{Sodium salicylate.}}{NaC_7H_5O_3} + \underset{\text{Water.}}{H_2O}.$$

Characters and Tests.—Small colourless, or nearly colourless, crystalline scales, inodorous, and having a sweetish saline taste. Slightly soluble in alcohol, readily soluble in water. When ignited, the salt evolves inflammable vapours, and a white residue remains which effervesces with acids and imparts an intense yellow colour to flame. Perchloride of iron colours a concentrated solution reddish-brown, and a dilute solution violet.

Therapeutics.—Antipyretic. A valuable remedy in acute rheumatism, rapidly reducing temperature, and cutting short the disease.

Dose.—10 to 30 grains.

LITHIUM. L.

Lithium.

OFFICIAL SALTS.

Carbonate of Lithium. **Citrate of Lithium.**

LITHII CARBONAS. L_2CO_3.

Carbonate of Lithium.

Can be made by acting on chloride of lithium, with carbonate of ammonium.

Characters.—Forms a white powder, or minute crystals, soluble in 150 parts of cold water. Moistened with hydrochloric acid, it imparts a red colour to flame.

OFFICIAL PREPARATION.

Liquor Lithiæ Effervescens.

Therapeutics.—Diuretic; given in gout, gravel, and renal calculus.

Dose.—3 to 6 grains. Liquor 5 to 10 ounces.

LITHII CITRAS. $L_3C_6H_5O_7 4H_2O$.

Citrate of Lithium.

Made by acting on carbonate of lithium with citric acid.

Characters.—A white, crystalline salt, soluble in water. Heated it chars, and imparts a red colour to flame.

Therapeutics.—Same as carbonate of lithium, but, being more soluble in water, is generally preferred.

Dose.—5 to 10 grains.

AMMONIUM.

Ammonium.

OFFICIAL COMPOUNDS.

Chloride of Ammonium.
Hydrate „
Carbonate „
Acetate „
Citrate „
Nitrate of Ammonium
Phosphate „
Bromide „
Benzoate „

AMMONII CHLORIDUM. NH_4Cl.

Chloride of Ammonium.

This salt, called sal ammoniac, is made by neutralising gas liquor with hydrochloric acid, then evaporating till crystals form. The crystals are purified by sublimation.

Characters.—Colourless, inodorous, fibrous masses, tough and difficult to powder. Heated it volatilises without change, leaving no residue. Iron and tarry matters may be present as impurities.

Therapeutics.—Given as an alterative in rheumatism, also in neuralgia.

Dose.—5 to 40 grains.

AMMONII HYDRAS (SOLUTION). NH_4HO.

Hydrate of Ammonium.

Liquor Ammoniæ Fortior.—Made by generating ammonia gas, and passing it into water, where it becomes absorbed. The materials employed are chloride of ammonium and slaked lime.

$$\underset{\text{Ammonium chloride.}}{2NH_4Cl} + \underset{\text{Calcium chloride.}}{Ca(HO)_2} = \underset{\text{Ammonia gas.}}{2NH_3} + \underset{\text{Water.}}{2H_2O} + \underset{\text{Calcium chloride.}}{CaCl_2}$$

The ammonia gas passed into water forms the solution :—

$$\underset{\text{Ammonia gas.}}{NH_3} + \underset{\text{Water.}}{H_2O} = \underset{\text{Ammonium hydrate.}}{NH_4HO}$$

Characters.—A colourless liquid with powerful odour of ammonia. Sp. gr., 0·891. One fluid drachm contains 15·8 grains of ammonia gas. It is powerfully alkaline in reaction, containing 380 times its volume of ammonia gas.

OFFICIAL PREPARATION.

Liquor Ammoniæ.

Also contained in—

Linimentum Camphoræ Co.
„ Ammoniæ.
Spiritus Ammoniæ Aromaticus.
„ „ Fœtidus.
Tinctura Opii Ammoniata.

Therapeutics.—Stimulant, expectorant, and rubefacient, used in syncope, bronchitis, pneumonia, nervous diseases, and fevers. The liniment is applied to the chest in bronchitis.

Dose.—Liquor, 2 to 10 minims.

AMMONII CARBONAS. $N_3H_{11}C_2O_5$.

Carbonate of Ammonium.

Made by heating together chloride or sulphate of ammonium, and carbonate of lime. During the operation ammonia gas is lost, and the salt, which sublimes and condenses, is of uncertain composition. It is considered to be a compound of acid carbonate of ammonium (NH_4HCO_3) with carbamate of ammonium ($NH_4NH_2CO_3$), about one molecule of each.

Characters.—Translucent, crystalline cakes, with a strong odour of ammonia, freely soluble in water; entirely volatilises when heated.

20 grains neutralise $26\frac{3}{4}$ grains citric acid.
" " $28\frac{3}{4}$ " tartaric acid.

Preparation for which carbonate of ammonium is used:—

SPIRITUS AMMONIÆ AROMATICUS.

Aromatic Spirits of Ammonia.

Made by mixing oils of lemon and nutmeg with rectified spirit and water, then distilling a given quantity. To the last portion of the distillate carbonate of ammonium and solution of ammonia are added, and a heat of 140° F. applied until solution takes place. The solution and distillate are now mixed. The common name of this preparation is sal volatile.

Therapeutics.—Both carbonate of ammonium and sal volatile act as stimulants and expectorants. Given in bronchitis, nervous diseases, fevers, and syncope.

Dose.—Carbonate, 5 to 15 grains; aromatic spirit, ½ to 1 drachm.

AMMONII ACETAS (LIQUOR). $NH_4C_2H_3O_2$.

Acetate of Ammonium (Solution Strong).

The strong official solution is made as follows:—

$$\underset{\text{Acetic acid.}}{2HC_2H_3O_2} + \underset{\substack{\text{Ammonium}\\\text{carbonate.}}}{(NH_4)_2CO_3} = \underset{\substack{\text{Ammonium}\\\text{acetate.}}}{2NH_4C_2H_3O_2} + \underset{\substack{\text{Carbon}\\\text{dioxide.}}}{CO_2} + \underset{\text{Water.}}{H_2O}$$

Characters.—A colourless solution, when heated to expel CO_2, should be neutral to test paper. Sp. gr., 1·073.

OFFICIAL PREPARATION.

Liquor Ammonii Acetatis.

Made by mixing 1 volume of the strong solution with 5 volumes water. Sp. gr., 1·022.

Therapeutics. — Diaphoretic and refrigerant, given in catarrhs and fevers.

Dose.—Strong solution, 20 to 70 minims; ordinary solution, 2 to 6 drachms.

AMMONII CITRAS (LIQUOR FORTIOR). $(NH_4)_3C_6H_5O_7$.

Strong Solution of Citrate of Ammonium.

Prepared by neutralising solution of ammonia with citric acid.

OFFICIAL PREPARATION.

Liquor Ammonii Citratis.

Therapeutics.—Same as acetate of ammonium.

Dose.—2 to 6 drachms.

AMMONII NITRAS. NH_4NO_3.

Nitrate of Ammonium.

Obtained by adding nitric acid to solution of ammonia, and crystallizing.

$$\underset{\text{Nitric acid.}}{HNO_3} + \underset{\text{Ammonium hydrate.}}{NH_4HO} = \underset{\text{Ammonium nitrate.}}{NH_4NO_3} + \underset{\text{Water.}}{H_2O}$$

Characters.—White, deliquescent, confused crystals, freely soluble in water. Heated strongly it fuses, and is decomposed into nitrous oxide gas and water.

Therapeutics.—The salt is not used internally; but nitrous oxide or laughing gas, is employed as an inhalation, to produce anæsthesia.

AMMONII PHOSPHAS. $(NH_4)_2HPO_4$.

Phosphate of Ammonium.

Made by adding solution of ammonia to phosphoric acid until it is slightly alkaline, then evaporating till crystals form.

$$\begin{array}{ccccccc} 2NH_4HO & + & H_3PO_4 & = & (NH_4)_2HPO_4 & + & 2H_2O \\ \text{Ammonium} & & \text{Phosphoric} & & \text{Ammonium} & & \text{Water.} \\ \text{hydrate.} & & \text{acid.} & & \text{phosphate.} & & \end{array}$$

Characters.—Crystalline colourless prisms of alkaline reaction. Freely soluble in water.

Therapeutics.—Used as a diuretic, in urinary calculi and gout.

Dose.—10 to 30 grains.

AMMONII BROMIDUM. NH_4Br.

Bromide of Ammonium.

Made by neutralising solution of ammonia with hydrobromic acid, and crystallizing :—

$$\begin{array}{ccccccc} NH_4HO & + & HBr & = & NH_4Br & + & H_2O \\ \text{Ammonium} & & \text{Hydrobromic} & & \text{Ammonium} & & \text{Water.} \\ \text{hydrate.} & & \text{acid.} & & \text{bromide.} & & \end{array}$$

Characters.—Forms colourless, granular crystals, subliming unchanged when heated. It often becomes yellow by exposure to the air.

Therapeutics.—Similar to bromide of potassium, chiefly used in epilepsy.

Dose.—5 to 20 grains.

AMMONII BENZOAS. $NH_4C_7H_5O_2$.

Benzoate of Ammonium.

Made by neutralising solution of ammonia with benzoic acid, and crystallizing :—

$$\begin{array}{ccccccc} NH_4HO & + & HC_7H_5O_2 & = & NH_4C_7H_5O_2 & + & H_2O \\ \text{Ammonium} & & \text{Benzoic} & & \text{Ammonium} & & \text{Water.} \\ \text{hydrate.} & & \text{acid.} & & \text{benzoate.} & & \end{array}$$

Characters.—Forms shining laminar crystals, burning with a yellow smoky flame, leaving no residue. A strong solution gives with hydrochloric acid a precipitate of benzoic acid.

Therapeutics.—Stimulating expectorant, and diuretic, useful in albuminuria. It is changed to hippuric acid in passing through the body.

Dose.—5 to 20 grains.

CALCIUM. Ca.

Calcium.

OFFICIAL COMPOUNDS.

Calcium Carbonate.
„ Oxide (Calx).
„ Hydrate.
„ Chloride.
„ Sulphate.
Calcium Phosphate.
„ Hypophosphite.
„ Sulphide.
„ Chlorinated.

CALCII CARBONAS.

Carbonate of Calcium.

This salt is official in four forms :—

(1) As **Chalk**, which is native friable carbonate of lime.

(2) **Creta Preparata** (Prepared Chalk). Made by freeing chalk of most of its impurities by the process of elutriation.

(3) **Marble**, a native crystalline carbonate of lime.

(4) **Calcis Carbonas Precipitata** (Precipitated Carbonate of Lime, $CaCO_3$). Made by adding carbonate of sodium to solution of chloride of calcium.

$$\begin{array}{ccccccc} Na_2CO_3 & + & CaCl_2 & = & 2NaCl & + & CaCO_3 \\ \text{Sodium carbonate.} & & \text{Calcium chloride.} & & \text{Sodium chloride.} & & \text{Calcium carbonate.} \end{array}$$

Characters.—Chalk forms compact, well-known white masses.

Prepared chalk is usually seen in small conical pieces, or as a dull white powder.

Precipitated carbonate of lime is a white powder, made up of minute crystals.

OFFICIAL PREPARATIONS.

Chalk is used in making prepared chalk, and marble as a source of CO_2.

Prepared chalk enters into :—

Mistura Cretæ.
Pulvis ,, Aromaticus.
,, ,, ,, c. Opio.
Hydrargyrum c. Creta.

Precipitated carbonate enters into Trochisci Bismuthi.

Therapeutics.—Astringent and antacid, chiefly given in diarrhœa.

Dose.—Of either carbonate, 10 to 30 grains ; of chalk mixture, ½ to 2 ounces ; of the aromatic powders 5 to 40 grains.

CALX. CaO.

Lime. Calcium Oxide.

Made from carbonate of lime, by strongly heating it in a current of air :—

$$\underset{\text{Calcium carbonate.}}{CaCO_3} = \underset{\text{Calx.}}{CaO} + \underset{\text{Carbon dioxide.}}{CO_2}$$

When made from marble it is much the purest, being freer from iron, alumina, and silica.

CALCII HYDRAS. $Ca(HO)_2$.

Hydrate of Calcium. Slaked Lime.

Made by treating lime with water.

OFFICIAL PREPARATIONS.

Liquor Calcis.
Linimentum Calcis.
Liquor Calcis. Saccharatus.

Therapeutics.—Lime water is used as an antacid in the dyspepsia of infants, also as an astringent for diarrhœa. For infants it is usually mixed with milk. The liniment is a favourite application for burns.

Dose.—Liquor, ½ to 2 ounces ; saccharated liquor, 15 to 60 minims.

CALCII SULPHAS. $CaSO_4 2H_2O$.

Sulphate of Calcium.

Native sulphate of calcium, made nearly anhydrous by heat. Used to make sulphurated lime.

CALX SULPHURATA.

Sulphurated Lime.

A mixture known as sulphide of calcium, containing not less than 50 per cent. of that substance.

It is made by heating strongly in a crucible a mixture of wood, charcoal, and sulphate of calcium.

Characters and Tests.—A nearly white powder, with a smell of H_2S. If 8 grains be added to a cold solution of 14 grains of sulphate of copper in an ounce of water, a little hydrochloric acid added, and heated, the filtered liquid should give no red colour with ferrocyanide of potassium.

Therapeutics.—Alterative, used in glandular affections, boils, and acne.

Dose.—$\frac{1}{10}$ to 1 grain.

CALX CHLORINATA. $Ca(ClO)_2,CaCl_2$.

Chlorinated Lime.

Made by passing chlorine gas over a layer of slaked lime :—

$$\underset{\text{Hydrate of lime.}}{2Ca(HO)_2} + \underset{\text{Chlorine.}}{2Cl_2} = \underset{\text{Chlorinated lime.}}{Ca(ClO)_2, CaCl_2} + \underset{\text{Water.}}{2H_2O}$$

Characters.—This compound is a mixture of hypochlorite and chloride of calcium. It forms a dull white powder, smelling of chlorine, which it evolves on the addition of an acid. Exposed to the air it absorbs CO_2, and evolves chlorine. It is commonly known as bleaching powder.

OFFICIAL PREPARATIONS.

Liquor Calcis Chlorinatæ. **Vapor Chlori.**

Chlorinated lime is used in the manufacture of chloroform.

Therapeutics.—Stimulant, antiseptic, and disinfectant ; the vapour is inhaled in gangrene of the lungs, phthisis, and chronic bronchitis. The solution is used as a wash to foul ulcers.

CALCII CHLORIDUM. $CaCl_2$.

Chloride of Calcium.

Made by neutralising slaked lime with hydrochloric acid, and removing iron from the solution by treatment with chlorinated lime and slaked lime :—

$$\underset{\text{Hydrate of lime.}}{Ca(HO)_2} + \underset{\text{Hydrochloric acid.}}{2HCl} = \underset{\text{Chloride of calcium.}}{CaCl_2} + \underset{\text{Water.}}{2H_2O}$$

Characters.—Forms semi-transparent, fused, or porous masses, dry but very deliquescent ; soluble in water and alcohol.

OFFICIAL PREPARATION.

Liquor Calcii Chloridi.

Therapeutics.—Astringent ; given in glandular diseases.

Dose.—5 to 10 grains.

CALCII HYPOPHOSPHIS. $Ca\,(PH_2O_2)_2$.

Hypophosphite of Calcium.

Made by heating phosphorus with slaked lime and water, until phosphuretted hydrogen gas ceases to be evolved. The liquid is now filtered, and CO_2 passed through it to remove excess of lime :—

$$\underset{\text{Calcium hydrate.}}{3Ca(HO)_2} + \underset{\text{Phosphorus.}}{8P} + \underset{\text{Water.}}{6H_2O} = \underset{\text{Hypophosphite of calcium.}}{3Ca(PH_2O_2)_2} + \underset{\text{Phosphuretted hydrogen.}}{2PH_3}$$

Characters.—A crystalline salt with a pearly lustre. Heated to redness it ignites, evolving spontaneously inflammable phosphuretted hydrogen.

Therapeutics.—Nervine tonic and alterative ; given in nervous depression and phthisis.

Dose.—3 to 10 grains.

CALCII PHOSPHAS. $Ca_3(PO_4)_2$.

Phosphate of Calcium.

Prepared from bone ash by digesting it with hydrochloric acid, then adding to the filtered liquid ammonia, to precipitate the phosphate of lime. The process is essentially one of purification.

Characters.—A white powder, insoluble in water, soluble in nitric and hydrochloric acids.

If to the nitric acid solution acetate of sodium be added in excess, it remains clear; but on the subsequent addition of oxalate of ammonium it lets fall a white precipitate.

Preparation containing phosphate of lime, Pulvis Antimonialis.

Therapeutics.—Given in scrofula and rickets, under the supposition that it promotes ossification.

Dose.—5 to 20 grains.

ALUMEN.

$Al_2 3SO_4, K_2SO_4, 24H_2O$ or $Al_2 3SO_4, (NH_4)_2SO_4\ 24H_2O$.

Alum.

Made from alum schist, by roasting and exposing it to the air. To the residue, either sulphate of potassium or ammonium is added, together with water; on evaporation the alum crystallises.

Characters.—Regular octahedral crystals, with an acid, sweetish, astringent taste. Its solution gives a white precipitate with caustic potash, soluble in excess; with ferrocyanide of potassium it gives little or no blue colour, showing traces or entire absence of iron.

OFFICIAL PREPARATIONS.

Glycerinum Aluminis.

Alumen Exsiccatum. (Dried Alum.)

The latter is made by heating alum to 400° F. till water ceases to be given off.

Therapeutics. — Astringent. Used as a gargle in sore throat, or as a lotion in leucorrhœa and ophthalmia.

CERIUM.

CERII OXALAS. $CeC_2O_4 3H_2O$.

Oxalate of Cerium.

The mineral cerite is the source of cerium salts. By treating chloride of cerium with oxalate of ammonium, oxalate of cerium falls as a white precipitate.

$$\underset{\text{Cerium chloride.}}{CeCl_2} + \underset{\text{Ammonium oxalate.}}{(NH_4)_2C_2O_4} = \underset{\text{Cerium oxalate.}}{CeC_2O_4} + \underset{\text{Ammonium chloride.}}{2NH_4Cl}$$

Therapeutics.—Given as a sedative and nervine tonic in vomiting of pregnancy.

Dose.—1 to 3 grains.

MAGNESIUM. Mg.

Magnesium.

OFFICIAL COMPOUNDS.

Sulphate of Magnesium.
Carbonate „ (Light).
„ „ (Heavy).
Magnesia (Light).
„ (Heavy).

MAGNESII SULPHAS. $MgSO_4 7H_2O$.

Sulphate of Magnesium.

Made from dolomite, or magnesite, by the action of sulphuric acid. Dolomite or magnesium limestone is a native carbonate of lime and magnesium. Magnesite is a nearly pure carbonate of magnesium :—

$$\underset{\text{Magnesite.}}{MgCO_3} + \underset{\text{Sulphuric acid.}}{H_2SO_4} = \underset{\text{Sulphate of magnesium.}}{MgSO_4} + \underset{\text{Water.}}{H_2O} + \underset{\text{Carbonic acid gas.}}{CO_2}$$

Characters.—Forms colourless prismatic crystals, difficult to distinguish from those of sulphate of zinc, but, as a rule they are moister. It is freely soluble in water, and on the addition of phosphate of sodium and solution of ammonia, lets fall a white crystalline precipitate, of ammonio-magnesian phosphate ; this is the test for all soluble magnesia salts.

Official Preparations.

Enema Magnesiæ Sulphatis.

Contained in Mistura Sennæ Co.

Therapeutics.—Saline purgative and diuretic, given in biliousness and constipation.

Dose.—20 to 60 grains as a diuretic; $\frac{1}{4}$ to $\frac{1}{2}$ ounce as a purgative.

MAGNESII CARBONAS PONDEROSA.

$(MgCO_3)_3\,Mg(HO)_2 4H_2O$.

Heavy Carbonate of Magnesium.

Prepared by mixing boiling solution of sulphate of magnesium and carbonate of sodium, and evaporating the mixture to dryness. The sulphate of sodium formed is now washed out with cold water:—

$$\underset{\substack{\text{Magnesium}\\\text{sulphate.}}}{4MgSO_4} + \underset{\substack{\text{Sodium}\\\text{carbonate.}}}{4Na_2CO_3} + \underset{\text{Water.}}{5H_2O} =$$

$$\underset{\substack{\text{Hydrated carbonate}\\\text{of magnesium.}}}{(MgCO_3)_3Mg(HO_2 4H_2O)} + \underset{\substack{\text{Sulphate}\\\text{of sodium.}}}{4Na_2SO_4} + \underset{\substack{\text{Carbon}\\\text{dioxide.}}}{CO_2}$$

Characters.—A white granular powder, dissolving with effervescence in the mineral acids.

Preparations containing carbonate of magnesium:—

Liquor Magnesiæ Carbonatis.
Trochisci Bismuthi.

MAGNESII CARBONAS LEVIS.

Light Carbonate of Magnesium.

Made the same way as the other carbonate, but the ingredients are boiled after mixing. The precipitate is filtered off, washed, and dried.

Characters.—A very light powder, partly amorphous, partly crystalline. Insoluble in water.

Therapeutics.—Both carbonates are antacid, laxative, and purgative; given in dyspepsia and constipation.

Dose.—10 to 60 grains; liquor, 1 to 2 ounces.

MAGNESIA PONDEROSA. MgO.

Heavy Magnesia.

MAGNESIA LEVIS. MgO.

Light Magnesia.

These two forms of the same oxide are made from the heavy and light carbonates of magnesium respectively, by heating them until portions taken from the centre no longer effervesce with acids.

Characters.—White powders without taste, almost insoluble in water, dissolving in acids without effervescence.

Either may be used as an ingredient of compound rhubarb powder.

Therapeutics and Dose.—Same as the carbonate.

ZINCUM. Zn.

Zinc.

OFFICIAL COMPOUNDS.

Sulphate of Zinc.
Chloride „ „
Carbonate „ „
Acetate „ „

Oxide of Zinc.
Sulphocarbolate of Zinc.
Valerianate „ „
Oleate „ „

Zinc is official in two forms—(1) as Zinc, which is the ordinary zinc of commerce; (2) Granulated Zinc, made by fusing commercial zinc, and pouring it into cold water.

Uses.—Chiefly for making the zinc salts.

ZINCI SULPHAS. $ZnSO_{4}7H_{2}O$.

Sulphate of Zinc.

Made by acting on zinc with sulphuric acid, then in order to remove any lead or iron, chlorine is passed through the solution, and carbonate of zinc added:—

$$\underset{\text{Zinc.}}{Zn} + \underset{\substack{\text{Sulphuric}\\\text{acid.}}}{H_2SO_4} = \underset{\substack{\text{Sulphate}\\\text{of zinc.}}}{ZnSO_4} + \underset{\text{Hydrogen.}}{H_2}$$

If iron be present in the zinc, it is converted by the chlorine into ferric sulphate, $Fe_2(SO_4)_3$; the carbonate of zinc is now added and reacts as follows:—

$$\underset{\text{Ferric sulphate.}}{Fe_2(SO_4)_3} + \underset{\substack{\text{Zinc}\\\text{carbonate.}}}{3ZnCO_3} = \underset{\substack{\text{Zinc}\\\text{sulphate.}}}{3ZnSO_4} + \underset{\substack{\text{Ferric}\\\text{oxide.}}}{Fe_2O_3} + \underset{\substack{\text{Carbonic}\\\text{acid gas.}}}{3CO_2}$$

The ferric oxide is removed by filtration.

Characters.—Forms crystals like sulphate of magnesium, but drier and slightly efflorescent. Its solution has an acid reaction. Sulphate of zinc should be dispensed with distilled water, as it gives a precipitate of carbonate of zinc, with common water.

Therapeutics.—Used locally as an astringent, in the form of lotion or injection; given internally as an emetic, nervine tonic, and astringent. It is employed in hysteria, chorea, and sweating.

Dose.—As an emetic, 10 to 30 grains; as a tonic, 1 increasing to 10 grains.

ZINCI CHLORIDUM. $ZnCl_2$.

Chloride of Zinc.

Obtained by acting on zinc with hydrochloric acid, and removing impurities with chlorine and carbonate of zinc:—

$$\underset{\text{Zinc.}}{Zn} + \underset{\substack{\text{Hydrochloric}\\\text{acid.}}}{2HCl} = \underset{\substack{\text{Chloride}\\\text{of zinc.}}}{ZnCl_2} + \underset{\text{Hydrogen.}}{H_2}$$

Characters.—In white tablets or rods, very caustic and deliquescent; forms a turbid solution with distilled water.

OFFICIAL PREPARATION.

Liquor Zinci Chloridi.

Made as above, then evaporated to a stated volume. It contains 366 grains $ZnCl_2$ in the fluid ounce.

Therapeutics.—Used externally as an antiseptic and escharotic. Applied to cancers and ulcers in the form of a paste, made up with flour and glycerine. Also used as an astringent injection.

ZINCI CARBONAS. $ZnCO_3(Zn2HO)_2,H_2O$.

Carbonate of Zinc.

Made by mixing, and boiling together, solutions of sulphate of zinc and carbonate of sodium, until effervescence ceases. The precipitate is then washed to free it from sulphate of sodium :—

$$\underset{\text{Zinc sulphate.}}{3ZnSO_4} + \underset{\text{Water.}}{2H_2O} + \underset{\text{Carbonate of sodium.}}{3Na_2CO_3}$$

$$= \underset{\text{Hydrated zinc carbonate.}}{ZnCO_3 2Zn(HO)_2} + \underset{\text{Carbonic acid gas.}}{2CO_2} + \underset{\text{Sulphate of sodium.}}{3Na_2SO_4}$$

Characters.—This salt is similar in constitution to carbonate of magnesium. It forms a white powder, insoluble in water; dissolving in acids with effervescence.

It is used in making zinc acetate and oxide.

Dose.—Same as the sulphate; rarely used.

ZINCI ACETAS. $Zn(C_2H_3O_2)_2 2H_2O$.

Acetate of Zinc.

Made by acting on carbonate of zinc with acetic acid :—

$$\underset{\text{Hydrated zinc carbonate.}}{ZnCO_3 2Zn(HO)_2} + \underset{\text{Acetic acid.}}{6HC_2H_3O_2} = \underset{\text{Acetate of zinc.}}{3Zn(C_2H_3O_2)_2} + \underset{\text{Carbonic acid gas.}}{CO_2}$$

$$+ \underset{\text{Water.}}{5H_2O}$$

Characters.—Transparent plates of a pearly lustre, sometimes mistaken for iodide of cadmium, but is not near as bright and shining. It has a slight acetous odour.

Therapeutics and Dose.—Same as the sulphate of zinc.

ZINCI OXIDUM. ZnO.

Oxide of Zinc.

Made by heating carbonate of zinc to redness, in a crucible, until a portion taken from the centre no longer effervesces with an acid :—

$$\underset{\text{Hydrated zinc carbonate.}}{ZnCO_3 2Zn(HO)_2} = \underset{\text{Zinc oxide.}}{3ZnO} + \underset{\text{Carbonic acid gas.}}{CO_2} + \underset{\text{Water.}}{2H_2O}$$

Characters.—A white powder, insoluble in water, soluble in acids. Heated it becomes yellow, and changes to white on cooling.

OFFICIAL PREPARATION.

Unguentum Zinci.

Therapeutics.—Nervine tonic and astringent.

Dose.—1, increasing to 5 grains.

ZINCI VALERIANAS. $Zn(Valer)_2$.

Valerianate of Zinc.

Made by pouring together hot solutions of sulphate of zinc and valerianate of sodium :—

$$\underset{\text{Sulphate of zinc.}}{ZnSO_4} + \underset{\text{Valerianate of sodium.}}{2NaValer} = \underset{\text{Valerianate of zinc.}}{Zn(Valer)_2} + \underset{\text{Sulphate of sodium.}}{2NaSO_4}$$

Characters.—Forms white, pearly, tabular crystals, with an unpleasant odour of valerianic acid. Distilled with dilute sulphuric acid, the distillate should not immediately affect the transparency of solution of acetate of copper. This test shows absence of butyric acid.

Therapeutics.—Nervine tonic and antispasmodic, given in hysteria, chorea, and epilepsy.

Dose.—1 to 4 grains.

ZINCI SULPHOCARBOLAS. $Zn(C_6H_5SO_4)_2H_2O$.

Sulphocarbolate of Zinc.

Made by heating a mixture of sulphuric and carbolic acids, so as to form sulphocarbolic acid. The acid is finally saturated with oxide of zinc, evaporated, and crystallised.

Characters.—Colourless crystals, freely soluble in water. Its aqueous solution is coloured violet by perchloride of iron.

Therapeutics. — Used in the form of injection, as an astringent and antiseptic.

ZINCI OLEATUM.

Oleate of Zinc.

A compound made by heating together oxide of zinc and oleic acid. It contains excess of oleic acid.

Characters.—A greyish-brown, unctuous, granular mass, fusing easily when heated.

OFFICIAL PREPARATION.

Unguentum Zinci Oleati.

Therapeutics.—Valuable local sedative and astringent, used for the treatment of eczema.

CALAMINA PREPARATA.

Prepared Calamine.

Native carbonate of zinc in powder, freed from gritty particles by elutriation. Its colour is pale pinkish-brown, due to traces of iron.

OFFICIAL PREPARATION.

Unguentum Calaminæ.

Therapeutics.—Used locally as a sedative and astringent in skin affections.

CUPRUM. Cu.

Copper.

OFFICIAL SALTS.

Sulphate of Copper. **Subacetate of Copper.**
Nitrate „ „

CUPRI SULPHAS. $CuSO_4 5H_2O$.

Sulphate of Copper.

Obtained by acting on copper with sulphuric acid and crystallizing:—

$$\underset{\text{Sulphuric acid.}}{2H_2SO_4} + \underset{\text{Copper.}}{Cu} = \underset{\text{Sulphate of copper.}}{CuSO_4} + \underset{\text{Sulphur dioxide.}}{SO_2} + \underset{\text{Water.}}{2H_2O}$$

Characters.—This salt forms large blue rhombic prisms, known as blue vitriol. It is very soluble in water, forming a deep blue solution with excess of ammonia.

Therapeutics.—Used internally as an emetic, astringent, and tonic; externally as a stimulant and escharotic.

Dose.—As a tonic, ½ to 2 grains; as an emetic, 8 to 10 grains.

CUPRI NITRAS. $Cu(NO_3)_2,3H_2O$.

Nitrate of Copper.

Made by dissolving copper in nitric acid and crystallising:—

$$\underset{\text{Copper.}}{3Cu} + \underset{\text{Nitric acid.}}{8HNO_3} = \underset{\text{Nitrate of copper.}}{3Cu(NO_3)_2} + \underset{\text{Water.}}{4H_2O} + \underset{\text{Nitric oxide.}}{N_2O_2}$$

Characters.—Deep blue crystals, very deliquescent and corrosive. With one-third of its weight of water, it forms at a temperature below 70° F. tabular crystals $Cu(NO_3)_2$ $6H_2O$. With a little more water it forms a styptic, caustic, corrosive fluid.

Therapeutics.—Used locally as stimulant, caustic, and escharotic.

CUPRI SUBACETAS. $Cu_2O(C_2H_3O_2)_2$.

Subacetate of Copper.

Made by exposing sheets of copper to the action of refuse grape husks; the compound which forms on the surface of the copper is scraped off, and constitutes the salt.

Characters.—Forms dark-green crystals of an acetous odour. Its common name is verdigris. A solution is official, and employed as a test for butyric acid in valerianic acid.

HYDRARGYRUM. Hg.

Mercury.

Quicksilver is obtained from cinnabar, a native sulphide of mercury, by heating the cinnabar alone, or with iron. In the process the mercury distils together with SO_2.

Characters.—When pure, mercury forms a bright white liquid, sp. gr. 13·59, perfectly volatile when heated. Rolled upon a sheet of white paper it leaves no mark or stain, showing absence of lead, zinc, tin, and other metals. Mercury alone is now rarely prescribed, but many of the official preparations owe their efficacy to the element in a fine state of division.

Official Preparations of Uncombined Mercury.

Hydrargyrum cum Creta.
Emp. Ammoniaci cum Hydrarg.
„ Hydrargyri.
Pilula „
Unguentum Hydrargyri.
„ „ Co.
Liniment. „
Suppositoria „

Hydrargyrum cum Creta, or Grey Powder.—This is made by rubbing 1 part of mercury with 2 parts of chalk, till globules are no longer visible. It forms a light slate-grey powder. By age some of the mercury becomes oxidised, and the powder increases in activity. The B. P. provides the following test to show if oxide is present:—"The powder treated with dilute hydrochloric acid and filtered should give no precipitate on the addition of chloride of tin." If it gives a grey precipitate, it shows the presence of mercuric oxide in the powder.

Therapeutics.—Free mercury acts as an alterative, cholagogue, and diuretic; given in syphilis, rheumatism, dropsy, and biliousness. Mercury with chalk is useful in diarrhœa; the ointments, liniments, and plasters, are applied to swollen joints.

Doses.—Mercury with chalk, 2 to 6 grains; mercurial pill, 3 to 8 grains.

Official Compounds of Mercury.

Nitrate of Mercury (Acid Solution).
Red Oxide of Mercury.
Sulphate „ „
Subchloride „ „
Perchloride of Mercury.
Red Iodide „ „
Oleate „ „
Yellow Oxide „
Ammoniated „

LIQUOR HYDRARGYRI NITRATIS ACIDUS.

Acid Solution of Nitrate of Mercury.

Made by dissolving mercury in excess of nitric acid without heat, then boiling for fifteen minutes :—

$$\underset{\text{Mercury.}}{3Hg} + \underset{\text{Nitric acid.}}{8HNO_3} = \underset{\text{Nitrate of mercury.}}{3Hg(NO_3)_2} + \underset{\text{Nitric oxide.}}{N_2O_2} + \underset{\text{Water.}}{4H_2O}$$

OFFICIAL PREPARATIONS.

Unguentum Hydrargyri Nitratis.

„ „ „ Dilutum.

The ointment is known as citrine ointment, from its citron-like colour. It is made by adding solution of nitrate of mercury to a mixture of melted lard and olive oil, then heating till frothing occurs.

Therapeutics.—Acid nitrate of mercury is sometimes used as a caustic application in cancer and lupus ; the ointment is used as a stimulant in eye and skin affections.

HYDRARGYRI OXIDUM RUBRUM. HgO.

Red Oxide of Mercury.

This, commonly called red precipitate, is made by rubbing mercury with nitrate of mercury, and heating till nitrous vapours cease to be evolved :—

$$\underset{\text{Nitrate of Mercury.}}{Hg(NO_3)_2} + \underset{\text{Mercury.}}{Hg} = \underset{\text{Red oxide of mercury.}}{2HgO} + \underset{\text{Nitric peroxide.}}{N_2O_4}$$

Characters.—It forms an orange-red powder, sometimes seen as crystalline scales. Heated it completely volatilises. It has the same composition as the yellow oxide of mercury, and becomes yellow by rubbing in a mortar.

OFFICIAL PREPARATION.

Unguentum Hydrargyri Oxidi Rubri.

Therapeutics. — Irritant and escharotic. When much diluted it is used as an eye ointment in ophthalmia, but the yellow oxide is preferable, being in a finer state of division.

HYDRARGYRI PERSULPHAS. $HgSO_4$.

Persulphate of Mercury.

Prepared by the action of sulphuric acid on mercury :—

$$\underset{\text{Mercury.}}{Hg} + \underset{\substack{\text{Sulphuric}\\\text{acid.}}}{2H_2SO_4} = \underset{\substack{\text{Sulphate}\\\text{of mercury.}}}{HgSO_4} + \underset{\substack{\text{Sulphurous}\\\text{anhydride.}}}{SO_2} + \underset{\text{Water.}}{2H_2O}$$

Characters.—This salt forms a white crystalline powder, changed yellow by washing with water, forming *turpeth mineral.* It is used in making subchloride and perchloride of mercury.

HYDRARGYRI SUBCHLORIDUM. $HgCl$.

Subchloride of Mercury. Calomel.

Obtained by rubbing mercury with sulphate of mercury to form subsulphate of mercury, Hg_2SO_4 ; to this chloride of sodium is added, and the mixture heated, when the calomel or subchloride of mercury sublimes. The vapour is passed into a cold chamber, and falls as a fine powder :—

$$\underset{\substack{\text{Subsulphate}\\\text{of mercury.}}}{Hg_2SO_4} \quad \underset{\substack{\text{Chloride}\\\text{of sodium.}}}{2NaCl} = \underset{\substack{\text{Subchloride}\\\text{of mercury.}}}{2HgCl} + \underset{\substack{\text{Sulphate of}\\\text{sodium.}}}{Na_2SO_4}$$

Characters.—Calomel forms a dull white powder, insoluble in water ; it is blackened with caustic potash, forming mercurous oxide, Hg_2O. Contact with hydrocyanic acid darkens it, with liberation of metallic mercury. Warm ether shaken with it, leaves no residue on evaporation ; this test shows the absence of perchloride of mercury, which is soluble in ether.

OFFICIAL PREPARATIONS.

Lotio Hydrargyri Nigra.
Pilula „ Subchloridi Co.
Unguentum „ Subchloridi.

Of the above the first is commonly known as Black Wash, the second as Plummer's Pill.

Therapeutics.—Alterative, cholagogue, and purgative.

Dose.—Alterative, ½ to 1 grain ; purgative, 2 to 5 grains ; of the compound pill, 5 to 10 grains.

HYDRARGYRI PERCHLORIDUM. $HgCl_2$.

Perchloride of Mercury.

Prepared by heating a mixture of sulphate of mercury, chloride of sodium, and manganese dioxide. Perchloride of mercury sublimes :—

$$\underset{\substack{\text{Sulphate}\\ \text{of mercury.}}}{HgSO_4} + \underset{\substack{\text{Chloride}\\ \text{of sodium.}}}{2NaCl} = \underset{\substack{\text{Perchloride}\\ \text{of mercury.}}}{HgCl_2} + \underset{\substack{\text{Sulphate}\\ \text{of sodium.}}}{Na_2SO_4}$$

The use of the manganese is to give free chlorine and prevent formation of calomel.

Characters.—This salt is called Corrosive Sublimate; it forms very heavy crystalline masses, soluble in water and alcohol. Its watery solution is decomposed by light, with formation of calomel. With caustic potash, soda, or lime, it gives a yellow precipitate of mercuric oxide. With albumen it gives a white insoluble precipitate; hence albumen is employed as the antidote in cases of poisoning with this drug.

OFFICIAL PREPARATIONS.

Liquor Hydrargyri Perchloridi.
Lotio „ Flava.

The lotion, commonly called Yellow Wash, owes its action to yellow oxide of mercury.

Therapeutics.—Alterative, sialagogue, and antiseptic; given in skin diseases and syphilis. Black and yellow washes are used as lotions to syphilitic sores.

Dose.—Of the perchloride $\frac{1}{20}$ to $\frac{1}{8}$ grain; of the liquor $\frac{1}{2}$ to 2 drachms.

HYDRARGYRI IODIDUM RUBRUM. HgI_2.

Red Iodide of Mercury.

Made by adding a solution of iodide of potassium to a solution of perchloride of mercury, and filtering off the red precipitate.

$$\underset{\text{Perchloride of mercury.}}{HgCl_2} + \underset{\text{Iodide of potassium.}}{2KI} = \underset{\text{Red iodide of mercury.}}{HgI_2} + \underset{\text{Chloride of potassium.}}{2KCl}$$

If excess of iodide of potassium be used the precipitate dissolves.

Characters.—It forms a brilliant-red amorphous or crystalline powder, soluble in ether. When heated it sublimes, and is deposited in the form of yellow prisms; these yellow prisms immediately change to red on being rubbed. This is due to allotropism, and not to any chemical change.

OFFICIAL PREPARATIONS.

Unguentum Hydrargyri Iodidi Rubri.
Liquor Arsenii et Hydrargyri Iodidi.

Therapeutics.—Irritant, caustic, and alterative; given in syphilis and glandular diseases.

Dose.—$\frac{1}{16}$ to $\frac{1}{4}$ grain.

HYDRARGYRI OXIDUM FLAVUM. HgO.

Yellow Oxide of Mercury.

Prepared by mixing solutions of the following, filtering, and washing the precipitate:—

$$\underset{\text{Mercuric chloride.}}{HgCl_2} + \underset{\text{Caustic soda.}}{2NaHO} = \underset{\text{Yellow oxide of mercury.}}{HgO} + \underset{\text{Chloride of sodium.}}{2NaCl} + \underset{\text{Water.}}{H_2O}$$

Characters.—A yellow powder, entirely resolved by heat into mercury and oxygen; it has the same chemical composition as the red oxide. In the preparation of ointments it has advantages over the red variety; being in a fine state of division it makes smooth ointments, which are comparatively more active, and yet do not irritate tender parts. This oxide is also employed to prepare the oleate of mercury, introduced by Professor Marshall as a cleanly substitute for mercury ointments.

Therapeutics.—Used as an ointment for the treatment of chronic inflammation of the joints, syphilis, and skin diseases.

HYDRARGYRUM AMMONIATUM. NH_2HgCl.

Ammoniated Mercury.

In making this salt a solution of perchloride of mercury is poured into a solution of ammonia, and the white precipitate filtered off; this order of mixing must be observed; if it be reversed a salt of different composition is obtained:—

$$\underset{\text{Perchloride of mercury.}}{HgCl_2} + \underset{\text{Solution of ammonia.}}{2NH_4HO} = \underset{\text{Ammoniated mercury.}}{NH_2HgCl} + \underset{\text{Ammonium chloride.}}{NH_4Cl} + \underset{\text{Water.}}{2H_2O}$$

Characters.—This salt, commonly called White Precipitate, forms a white chalklike amorphous powder or lumps, having a short starchy fracture. Heated with potash it becomes yellow, and evolves ammonia.

OFFICIAL PREPARATION.

Unguentum Hydrargyri Ammoniati.

Therapeutics.—Used externally to destroy pediculi, also as a stimulant in skin affections.

HYDRARGYRI OLEATUM.

Oleate of Mercury.

Made by gently shaking yellow oxide of mercury on to oleic acid kept stirred in a mortar, and stirring from time to time until the oxide is dissolved. The proportions are 1 of oxide to 9 of acid, making a 10 per cent. solution of the oxide. If a 5 per cent. solution is desired, it can be made by diluting the above with an equal volume of olive oil or oleic acid.

Characters. — A pale-brown, oily semigelatinous substance, of rancid odour. By long keeping it changes grey, and deposits mercury, losing strength thereby.

Therapeutics.—Used as a cleanly substitute for mercurial ointment. Applied to swollen joints, syphilitic and other skin diseases.

ARGENTUM. Ag.

Silver.

OFFICIAL COMPOUNDS.

Nitrate of Silver. **Oxide of Silver.**

ARGENTUM PURIFICATUM.

Refined Silver.

Pure silver is used in making the silver salts. As a test for its purity it is dissolved in nitric acid, then ammonia added in excess, when the solution should show neither colour nor turbidity.

ARGENTI NITRAS. $AgNO_3$.

Nitrate of Silver.

Made by dissolving silver in nitric acid and crystallising:—

$$\underset{\text{Silver.}}{6Ag} + \underset{\text{Nitric acid.}}{8HNO_3} = \underset{\substack{\text{Nitrate of}\\ \text{silver.}}}{6AgNO_3} + \underset{\text{Water.}}{4H_2O} + \underset{\substack{\text{Nitric}\\ \text{oxide.}}}{N_2O_2}$$

Characters.— This salt is found in commerce in two forms: (1) Colourless, rhombic prisms; (2) pencils or sticks called lunar caustic. Both kinds by exposure to light become darkened in colour.

OFFICIAL PREPARATION.

Argenti et Potassii Nitras.

This mixture is known as Mitigated Caustic, and made by fusing 1 part nitrate of silver, and 2 parts nitrate of potassium, then moulding into sticks.

Therapeutics.—Nitrate of silver is used externally as an irritant and escharotic; applied to wounds, ulcers, skin diseases, and erysipelas. Given internally as an astringent and alterative in epilepsy, chorea, gastric affections and diarrhœa.

Dose.—$\frac{1}{4}$ to $\frac{1}{2}$ grain.

ARGENTI OXIDUM. Ag_2O.

Oxide of Silver.

Obtained by pouring solution of nitrate of silver into lime water, washing, and drying the precipitate:—

$$\underset{\text{Nitrate of silver.}}{2AgNO_3} + \underset{\text{Lime water.}}{Ca(HO)_2} = \underset{\text{Oxide of silver.}}{Ag_2O} + \underset{\text{Nitrate of calcium.}}{Ca(NO_3)_2} + \underset{\text{Water.}}{H_2O}$$

Characters.—An olive-brown powder, which at a low red heat gives off oxygen, leaving silver. It readily oxidises organic matters, hence is incompatible with them; this is especially the case with creasote, the mixture being combustible.

Therapeutics.—Same as the nitrate.

Dose.—$\frac{1}{2}$ to 2 grains.

AURUM. Au.

Gold.

Official in the appendix of the B. P. in the form of a solution of the chloride, which is employed as a test for atropine, with which it gives a yellow precipitate. This test is of little value, as other alkaloids give similar precipitates.

PLATINUM. Pt.

Platinum.

This element yields a test-solution in the form of perchloride of platinum. It is employed to identify potassium and ammonium salts, giving yellow crystalline precipitates with both.

STANNUM. Sn.

Tin.

A solution of the chloride is official, used as a test for oxide of mercury in Hyd. c. Cret.

PLUMBUM. Pb.

Lead.

Official Salts.

Oxide of Lead.
Acetate „
Subacetate „ (Solution).
Nitrate of Lead.
Iodide „
Carbonate „

PLUMBI OXIDUM. PbO.

Lead Oxide. Litharge.

Made by heating lead in a current of air.

Characters.—Heavy scales of a pale brick-red colour, or as a dull orange-coloured powder. It should not effervesce when dissolved in nitric acid. Heated with olive oil and water it forms lead oleate, which is official as lead plaster..

Uses.—Never given internally, but mainly used in making lead salts. Lead plaster, when spread on linen or calico, is used as sticking plaster, for the purpose of affording mechanical support in surgery.

PLUMBI ACETAS. $Pb(C_2H_3O_2)_2$.

Acetate of Lead. Sugar of Lead.

Prepared by dissolving oxide of lead in acetic acid and crystallising:—

$$\underset{\text{Oxide of lead.}}{PbO} + \underset{\text{Acetic acid.}}{2HC_2H_3O_2} = \underset{\text{Acetate of lead.}}{Pb2C_2H_3O_2} + \underset{\text{Water.}}{H_2O}$$

Characters.—This salt is known as sugar of lead; it forms crystalline masses of an acetous odour, and sweet astringent taste. Acetate of lead is soluble in water and alcohol; with common water it gives a white precipitate of chloride and carbonate of lead, due to impurities in the water; hence it should be dispensed with distilled water.

OFFICIAL PREPARATIONS.

Pilula Plumbi cum Opio.
Suppositoria Plumbi Co.
Unguentum Plumbi Acetatis.

Therapeutics.—Employed as a sedative and astringent in hæmorrhages, diarrhœa, and mucous discharges. The ointment and lotions are used locally as astringents.

Dose.—$\frac{1}{2}$ to 2 grains; of pill of lead and opium, 2 to 8 grains, suppository 1 or more daily.

LIQUOR PLUMBI SUBACETATIS. $Pb_2O(C_2H_3O_2)_2$.

Solution of Subacetate of Lead.

Made by boiling oxide of lead with acetate of lead and water :—

$$\underset{\text{Lead oxide.}}{PbO} + \underset{\text{Lead acetate.}}{Pb(C_2H_3O_2)_2} = \underset{\text{Lead subacetate.}}{Pb_2O(C_2H_3O_2)_2}$$

Characters.—It forms a colourless solution, known as Goulard's extract. It has an alkaline reaction. Exposed to the air it becomes turbid through formation of hydrated carbonate of lead. Solution of subacetate of lead gives insoluble precipitates with mucilage of acacia, most vegetable astringent matters, organic and mineral acids ; hence it is incompatible with them. With tincture or wine of opium it gives a precipitate of meconate of lead.

OFFICIAL PREPARATIONS.

Glycerinum Plumbi Subacetatis.
Liquor „ „ Dilutus.
Unguentum Glycerini Plumbi Subacetatis.

Therapeutics.—Used locally as an astringent and sedative. The dilute solution is generally prescribed as "Lotio Plumbi."

PLUMBI NITRAS. $Pb(NO_3)_2$.

Nitrate of Lead.

Made by dissolving lead, or lead oxide, in nitric acid and crystallising :—

$$\underset{\text{Oxide of lead.}}{PbO} + \underset{\text{Nitric acid.}}{2HNO_3} = \underset{\text{Nitrate of lead.}}{Pb(NO_3)_2} + \underset{\text{Water.}}{H_2O}$$

Characters.—It forms octahedral crystals soluble in water. Employed in the preparation of iodide of lead.

PLUMBI IODIDUM. PbI_2.

Iodide of Lead.

Made by mixing solutions of nitrate of lead and iodide of potassium, and collecting the precipitate :—

$$\underset{\text{Nitrate of lead.}}{Pb(NO_3)_2} + \underset{\text{Iodide of potassium.}}{2KI} = \underset{\text{Iodide of lead.}}{PbI_2} + \underset{\text{Nitrate of potassium.}}{2KNO_3}$$

Characters.—Iodide of lead forms a bright yellow powder soluble in boiling water, depositing as it cools golden crystalline scales.

OFFICIAL PREPARATIONS.

Emplastrum Plumbi Iodidi.
Unguentum Plumbi Iodidi.

Therapeutics.—Used externally as a stimulant, in the form of ointment or plaster, to enlarged joints and glands.

PLUMBI CARBONAS. $PbCO_3Pb(HO)_2$.

Carbonate of Lead.

The formula shows this salt to be a hydrated carbonate of lead, but it varies in composition. It is made by exposing sheets of metallic lead to the action of acetous vapours and carbonic anhydride, generated from vinegar and spent tan. It is supposed that the acetic acid first converts the lead into acetate, then carbonic anhydride converts the acetate to carbonate.

Characters.—Forms a soft, heavy, white powder, insoluble in water. Treated with nitric or acetic acids it dissolves with effervescence, forming a clear solution.

OFFICIAL PREPARATION.

Unguentum Plumbi Carbonatis.

Therapeutics.—Has the general action of lead salts. Only used externally.

FERRUM. Fe.

Iron.

Iron, as the metal, is official in two forms: (1) as Iron Wire or Nails, free from oxide. The iron should be the purest that can be obtained, and of the variety known as wrought iron; (2) as a black powder, known as Reduced Iron, or Ferrum Redactum.

Official Preparations of Iron Wire.

Vinum Ferri.
Mistura Ferri Aromatica.

Therapeutics.—Steel wine is a pleasant form for giving iron to children, and is employed as a hæmatinic in anæmia.

The aromatic iron mixture is used for the same purpose in adult cases.

Dose.—Of steel wine, 1 drachm to 1 ounce; of aromatic mixture, ½ to 2 ounces.

FERRUM REDACTUM.

Reduced Iron.

Made by heating peroxide of iron in a gun-barrel, and passing hydrogen through the heated oxide, continuing the stream of hydrogen as the product cools:—

$$\underset{\text{Peroxide of iron.}}{Fe_2O_3} + \underset{\text{Hydrogen.}}{3H_2} = \underset{\text{Reduced iron.}}{Fe_2} + \underset{\text{Water.}}{3H_2O}$$

The hydrogen used in the process should be quite pure, and free from sulphuretted hydrogen; otherwise sulphide of iron would form and constitute a most objectionable impurity, giving rise, when swallowed, to unpleasant eructations.

Characters.—A greyish-black powder, strongly attracted by the magnet, soluble in hydrochloric acid, giving off hydrogen. It usually contains a small quantity of oxide of iron.

Official Preparation.

Trochisci Ferri Redacti.

Therapeutics.—A powerful hæmatinic, free from astringency. It has the advantage of being tasteless, and remains easily on the stomach.

Dose.—2 to 6 grains; lozenges, 3 to 8 daily.

FERROUS SALTS.

The following salts contain iron in the ferrous state; that is, they are salts of the lower oxide of iron, FeO:—

Ferri Sulphas.	**Ferri Arsenias.**
„ Carbonas.	**„ Phosphas.**

FERRI SULPHAS. $FeSO_4 7H_2O$.

Sulphate of Iron.

Made by dissolving iron in sulphuric acid and crystallising:—

$$\underset{\text{Iron.}}{Fe} + \underset{\text{Sulphuric acid.}}{H_2SO_4} = \underset{\text{Sulphate of iron.}}{FeSO_4} + \underset{\text{Hydrogen.}}{H_2}$$

Characters.—Sulphate of iron is called green vitriol; it forms rhombic prisms of a green colour. Its solution in water gives a pale-blue precipitate with ferrocyanide of potassium, characteristic of all ferrous salts.

Solution of sulphate of iron should give no precipitate with sulphuretted hydrogen, indicating absence of such impurities as arsenic and copper.

There are two more forms of ferrous sulphate official, namely:—

Ferri Sulphas Exsicata.
Ferri Sulphas Granulata.

The first is made by heating the ordinary sulphate to 212° F. to drive off water. The second by pouring a hot solution of the sulphate into rectified spirit. Sulphate of iron enters into Mist. Ferri Comp.

Therapeutics.—Given as a hæmatinic and astringent in anæmia; in large doses it is emetic.

Dose.—Of sulphate or granulated sulphate, 1 to 10 grains; of dried sulphate, 2 to 8 grains, in form of pill.

FERRI CARBONAS SACCHARATA. $FeCO_3{}^{x}H_2O$.

Saccharated Carbonate of Iron.

Prepared by adding solution of carbonate of ammonium to solution of sulphate of iron; the precipitate, after washing and pressing, is mixed with sugar and quickly dried:—

$$\underset{\text{Carbonate of ammonium.}}{(NH_4)_2CO_3} + \underset{\text{Sulphate of iron.}}{FeSO_4} = \underset{\text{Carbonate of iron.}}{FeCO_3} + \underset{\text{Sulphate of ammonium.}}{(NH_4)_2SO_4}$$

Carbonate of iron is a very unstable preparation; hence sugar is added, which by acting as a varnish greatly assists preservation.

Characters.—Has a dull-brown colour and sweet chalybeate taste. Dissolves with effervescence in hydrochloric acid.

OFFICIAL PREPARATION.

Pilula Ferri Carbonatis.

Also the chief ingredient of Mistura Ferri Co.

Therapeutics.—Has the general action of iron, but is only slightly astringent.

FERRI ARSENIAS. $Fe_3(AsO_4)_2$.

Arseniate of Iron.

It consists of ferrous and ferric arseniates with some oxides. Made by mixing solutions of sulphate of iron and arseniate of sodium. Some bicarbonate of sodium is now added so as to neutralise free sulphuric acid which is formed:—

$$\underset{\text{Arseniate of sodium.}}{2Na_2HAsO_4} + \underset{\text{Sulphate of iron.}}{3FeSO_4} = \underset{\text{Arseniate of iron.}}{Fe_3(AsO_4)_2} + \underset{\text{Sulphate of sodium.}}{2Na_2SO_4} + \underset{\text{Sulphuric acid.}}{H_2SO_4}$$

The free sulphuric acid keeps some of the iron salt in solution, but on adding the carbonate of sodium the acid is made neutral, and the iron salt falls.

Characters.—A tasteless, amorphous, pale-greenish coloured powder, insoluble in water, soluble in hydrochloric acid. The latter solution reacts both as a ferrous and ferric salt.

Therapeutics.—Alterative and tonic. Rarely prescribed, as the small amount of iron it contains is said to be of questionable value.

Dose.—$\frac{1}{16}$ to $\frac{1}{2}$ grain, in pill.

FERRI PHOSPHAS. $Fe_3(PO_4)_2$.

Phosphate of Iron.

Ferrous phosphate, with ferric phosphate and some oxide. Made by adding solution of ferrous sulphate to solution of sodium phosphate, finally adding sodium bicarbonate to neutralise free acid :—

$$\underset{\text{Ferrous sulphate.}}{3FeSO4} + \underset{\text{Sodium phosphate.}}{2Na_2HPO_4} = \underset{\text{Ferrous phosphate.}}{Fe_3(PO_4)_2} + \underset{\text{Sodium sulphate.}}{2Na_2SO_4} + \underset{\text{Sulphuric acid.}}{H_2SO_4}$$

Characters.—A dark slate-blue, amorphous powder, insoluble in water, soluble in hydrochloric acid. The solution in HCl reacts both as a ferrous and ferric salt.

OFFICIAL PREPARATION.

Syrupus Ferri Phosphatis.

This syrup is made by dissolving fresh phosphate of iron made as above in excess of phosphoric acid, then adding sugar. It contains 1 grain of phosphate in each drachm.

Therapeutics.—Largely used as a blood restorer. Combined with lime, soda, and potash, it is known as "compound syrup of the phosphates," or chemical food, and used for the treatment of rickets and debility.

Dose.—5 to 10 grains ; syrup, $\frac{1}{2}$ to 2 drachms.

FERRI IODIDUM. FeI_2.

Iodide of Iron.

Official in two preparations, and made in both cases by direct union of the elements iodine and iron, in the presence of water.

OFFICIAL PREPARATIONS.

Pilula Ferri Iodidi.
Syrupus „ „

Therapeutics. — Possesses the combined properties of iodine and iron; given as an alterative and hæmatinic in scrofula and syphilis.

Dose.—Of the pill, 3 to 8 grains; of the syrup, ½ to 2 drachms.

The syrup should not be prescribed with water, as it soon decomposes; the patient should dilute it with water at the time of taking.

FERRIC SALTS.

Ferri Perchloridi (Liquor).	**Ferri Acetatis (Liquor).**
„ Persulphatis „	**„ Peroxidum Hydratum.**
„ Pernitratis „	

These are compounds of the high oxide of iron, Fe_2O_3.

FERRI PERCHLORIDI LIQUOR FORTIOR. Fe_2Cl_6.

Strong Solution of Perchloride of Iron.

Made by dissolving iron in hydrochloric acid, then heating with nitric acid. The first action results in the formation of ferrous chloride :—

$$\underset{\text{Iron.}}{Fe} + \underset{\text{Hydrochloric acid.}}{2HCl} = \underset{\text{Ferrous chloride.}}{FeCl_2} + \underset{\text{Hydrogen.}}{H_2}$$

The second change is the conversion of ferrous into ferric chloride :—

$$\underset{\text{Ferrous chloride.}}{6FeCl_2} + \underset{\text{Hydrochloric acid.}}{6HCl} + \underset{\text{Nitric acid.}}{2HNO_3} = \underset{\text{Perchloride of iron.}}{3Fe_2Cl_6} + \underset{\text{Water.}}{4H_2O} + \underset{\text{Nitric oxide.}}{N_2O_2}$$

Characters.—Strong solution of perchloride of iron is of a reddish-brown colour and acid astringent taste; it gives a blue precipitate with ferrocyanide of potassium, no precipitate with ferricyanide of potassium, but a reddish-brown precipitate with ammonia.

The above tests characterise ferric salts.

OFFICIAL PREPARATIONS.

Liquor Ferri Perchloridi.
Tinctura „ „
Liquor „ Dialysatus.

The last of these, called dialysed iron, is a highly basic oxychloride of iron from which most of the acid matter has been removed by dialysis (*vide* liquors).

Therapeutics. — Powerful astringent; given in anæmia, hæmorrhages, and erysipelas. Used locally to stop bleeding, and as a paint to sore throats.

Dose.—Strong liquor, 3 to 10 minims; liquor, tincture, or dialysed iron, 10 to 40 minims.

FERRI PERNITRATIS LIQUOR. $Fe_2(NO_3)_6$.

Solution of Pernitrate of Iron.

Made by dissolving iron in diluted nitric acid:—

$$\underset{\text{Iron.}}{2Fe} + \underset{\text{Nitric acid.}}{8HNO_3} = \underset{\text{Pernitrate of iron.}}{Fe_2(NO_3)_6} + \underset{\text{Nitric oxide.}}{N_2O_2}$$

Forms a reddish-brown solution.

Therapeutics.—Same as perchloride.

Dose.—10 to 40 minims.

FERRI PERSULPHATIS LIQUOR. $Fe_2(SO_4)_3$.

Solution of Persulphate of Iron.

Made by the action of nitric acid, on ferrous sulphate and sulphuric acid.

$$\underset{\text{Ferrous sulphate.}}{6FeSO_4} + \underset{\text{Sulphuric acid.}}{3H_2SO_4} + \underset{\text{Nitric acid.}}{2HNO_3} = \underset{\text{Persulphate of iron.}}{3Fe_2(SO_4)_3} + \underset{\text{Water.}}{4H_2O} + \underset{\text{Nitric oxide.}}{N_2O_2}$$

It is not used as a medicine, but employed for the preparation of the hydrated peroxide of iron.

FERRI PEROXIDUM HYDRATUM. $Fe_2O_2(HO)_2$.

Peroxide of Iron.

Made by adding a solution of persulphate of iron to solution of soda, collecting and washing the precipitate; finally drying the precipitate at a temperature not exceeding 212° F.

$$\underset{\text{Persulphate of iron.}}{Fe_2(SO_4)_3} + \underset{\text{Hydrate of sodium.}}{6NaHO} = \underset{\text{Hydrate of iron.}}{Fe_2(HO)_6} + \underset{\text{Sodium sulphate.}}{3Na_2SO_4}$$

$$\underset{\text{Hydrate of iron.}}{Fe_2(HO)_6} + \text{Heat} = \underset{\text{Peroxide of iron.}}{Fe_2O_2(HO)_2} + \underset{\text{Water.}}{2H_2O}$$

Characters.—A reddish-brown powder, insoluble in water. Dissolves slowly, by the aid of heat, in hydrochloric acid.

OFFICIAL PREPARATION.

Emplastrum Ferri.

This plaster is often called "Roboran's plaster."

Therapeutics.—Same as most iron salts; said to be an effectual remedy in neuralgia. The plaster is used as a strapping to support weak parts, and is supposed to strengthen.

Dose.—½ to 1 drachm in treacle or honey.

FERRI ACETATIS (LIQUOR FORTIOR). $Fe_2(C_2H_3O_2)_6$.

Strong Solution of Acetate of Iron.

Made by dissolving freshly-made ferric hydrate in glacial acetic acid and water.

$$\underset{\text{Ferric hydrate.}}{Fe_2(HO)_6} + \underset{\text{Acetic acid.}}{6HC_2H_3O_2} = \underset{\text{Ferric acetate.}}{Fe_2(C_2H_3O_2)_6} + \underset{\text{Water.}}{6H_2O}$$

Characters.—A deep-red fluid of acetous odour, miscible with spirits of wine or water.

Official Preparations.

Liquor Ferri Acetatis.
Tinctura „ „

Therapeutics.—Same as other iron preparations.

Dose.—Strong liquor, 2 to 8 minims. Liquor or tincture, 10 to 30 minims.

SCALE PREPARATIONS OF IRON.

These are not well-defined chemical compounds. None of them form crystals. They can be made without any attention to combining weights. The base of them all is ferric hydrate. Three are official: Ferrum Tartaratum, Ferri et Ammoniæ Citras, Ferri et Quininæ Citras.

FERRUM TARTARATUM.

Tartarated Iron.

Made by dissolving fresh-made hydrate of iron in acid tartrate of potassium, evaporating to a syrup, and drying on sheets of glass. It forms deep garnet-red scales, soluble in water.

FERRI ET AMMONIÆ CITRAS.

Citrate of Iron and Ammonia.

Made by dissolving hydrate of iron in citric acid, and adding some solution of ammonia; evaporating and drying on glass.

It forms deep-red scales, paler than the tartarated iron, freely soluble in water.

Official Preparation.

Vinum Ferri Citratis.

Therapeutics.—Both the above have the usual action of iron without its astringent effect; they have but little taste, and are well borne by the stomach.

Dose.—Of either, tartarated or citrate, 5 to 20 grains.

FERRI ET QUININÆ CITRAS.

Citrate of Iron and Quinine.

Pure quinine is first made by adding solution of ammonia to solution of sulphate of quinine; the precipitate thus formed is dissolved, together with ferric hydrate, in citric acid; a small quantity of ammonia is finally added, and the solution evaporated and scaled on glass.

Characters.—Forms scales of a greenish-yellow colour. If 100 grains be dissolved in water, and slight excess of ammonia added, it gives a white precipitate of pure quinine, which, when collected and dried, should weigh 16 grains. This test shows that the compound should contain 16 per cent. quinine.

Therapeutics.—Has the combined valuable properties of iron and quinine; therefore, it is tonic and hæmatinic.

Dose.—5 to 15 grains.

BISMUTHUM. Bi.

Bismuth.

OFFICIAL COMPOUNDS.

Subnitrate of Bismuth
Carbonate „ „
Oxide „ „
Citrate „ „
„ „ „ and Ammonium.

BISMUTHUM PURIFICATUM.

Purified Bismuth.

The crude bismuth is first melted with a mixture of cyanide of potassium and sulphur; the partly purified metal is now re-melted with a mixture of the carbonates of potassium and sodium. This treatment removes arsenium, copper, silver, lead, selenium, tellurium, and iron.

Characters.—Crystalline, greyish-white metal, with a roseate tinge. Specific gravity, 9·83.

Uses.—To make bismuth salts.

BISMUTHI SUBNITRAS. $BiONO_3,H_2O$.

Subnitrate of Bismuth.

Made by dissolving bismuth in nitric acid by the aid of heat :—

$$\underset{\text{Bismuth.}}{2Bi} + \underset{\text{Nitric acid.}}{8HNO_3} = \underset{\text{Nitrate of bismuth.}}{2Bi(NO_3)_3} + \underset{\text{Nitric oxide.}}{N_2O_2} + \underset{\text{Water.}}{4H_2O}$$

The solution thus obtained is very acid ; on pouring it into water a white precipitate falls, which is the subnitrate of bismuth :—

$$\underset{\text{Nitrate of bismuth.}}{Bi(NO_3)_3} + \underset{\text{Water.}}{2H_2O} = \underset{\text{Subnitrate of bismuth.}}{BiONO_3,\ H_2O} + \underset{\text{Nitric acid.}}{2HNO_3}$$

Characters.—It forms a heavy, amorphous-looking powder, really consisting of minute crystalline scales. It is insoluble in water, but soluble in nitric acid.

OFFICIAL PREPARATION.

Trochisci Bismuthi.

Therapeutics.—Given as a sedative in dyspepsia and vomiting, also as an astringent in diarrhœa.

Dose.—5 to 20 grains. Mucilage of tragacanth or acacia should always be prescribed with bismuth salts, so as to keep them in a state of suspension.

BISMUTHI CARBONAS. $(Bi_2O_2CO_3)_2H_2O$.

Carbonate of Bismuth.

Made by adding solution of nitrate of bismuth to carbonate of ammonium, removing the precipitate by a filter and drying at 150° F.

$$\underset{\text{Nitrate of bismuth.}}{4Bi(NO_3)_3} + \underset{\text{Carbonate of ammonium.}}{6(NH_4)_2CO_3} = \underset{\text{Carbonate of bismuth.}}{2Bi_2O_2CO_3} + \underset{\text{Carbon dioxide.}}{4CO_2} + \underset{\text{Nitrate of ammonium.}}{12NH_4NO_3}$$

Characters.—White powder, more bulky than the subnitrate, dissolving with effervescence in nitric acid.

Therapeutics.—Similar to the subnitrate, but in addition it has antacid properties.

BISMUTHI CITRAS. $BiC_6H_5O_7$.

Citrate of Bismuth.

Made by dissolving subnitrate of bismuth in nitric acid. Citric acid is now added to a solution of bicarbonate of sodium, the latter being in excess. The two solutions are now mixed and heated to boiling. When cold the precipitated citrate of bismuth is collected, washed, and dried.

Characters.—A white powder, soluble in solution of ammonia.

Official Preparation.

Liquor Bismuthi et Ammonii Citratis.

Therapeutics.—Sedative and astringent.

Dose.—2 to 5 grains.

BISMUTHI ET AMMONII CITRAS.

Citrate of Bismuth and Ammonium.

Made by evaporating the solution of citrate of bismuth and ammonia (*vide* solutions) to a syrupy consistence, and scaling by spreading on glass plates, and drying.

Characters.—Small, shining scales, soluble in water.

Therapeutics.—Same as citrate. Has the advantage over other bismuth salts of being soluble in water.

Dose.—2 to 5 grains. Liquor, $\frac{1}{2}$ to 2 drachms.

ANTIMONIUM. Sb.

Antimony.

OFFICIAL COMPOUNDS.

Antimonium Nigrum Purificatum.
„ Sulphuratum.
„ Chloridum (Liquor).
Antimonii Oxidum.
Antimonium Tartaratum.

ANTIMONIUM NIGRUM PURIFICATUM. Sb_2S_3.

Purified Black Antimony.

Native sulphide of antimony purified from siliceous matter by fusion, reduced to fine powder, and, if necessary, freed from arsenium by maceration with solution of ammonia and washing with water.

It is the source of other official antimony compounds.

ANTIMONIUM SULPHURATUM.

Sulphurated Antimony.

A mixture of pentasulphide and oxide of antimony (Sb_2S_5), and (Sb_2O_3).

Made by boiling black antimony and sublimed sulphur with solution of soda, straining through calico, adding dilute sulphuric acid to the warm liquid, and washing and drying the precipitate.

Characters.—An orange-red powder, insoluble in water.

Used as an ingredient of Pil. Hydrarg. Subchlor. Co.

Therapeutics.—Not used internally, except in the form of the above pill, where it acts the part of an alterative.

Dose.—1 to 5 grains.

ANTIMONII CHLORIDI LIQUOR. $SbCl_3$.

Solution of Chloride of Antimony.

Made by dissolving black antimony in hydrochloric acid by the aid of heat.

$$\underset{\substack{\text{Sulphide}\\\text{of antimony.}}}{Sb_2S_3} + \underset{\substack{\text{Hydrochloric}\\\text{acid.}}}{6HCl} = \underset{\substack{\text{Chloride}\\\text{of antimony.}}}{2SbCl_3} + \underset{\substack{\text{Hydric}\\\text{sulphide.}}}{3H_2S}$$

Characters.—A heavy liquid, of a yellowish-red colour, but nearly white if pure. The colour is mainly due to iron. Used in making oxide of antimony.

ANTIMONII OXIDUM. Sb_2O_3.

Oxide of Antimony.

Made by pouring a solution of chloride of antimony into water, when a white precipitate falls, which is oxychloride of antimony:—

$$\underset{\substack{\text{Chloride}\\\text{of antimony.}}}{SbCl_3} + \underset{\text{Water.}}{H_2O} = \underset{\substack{\text{Oxychloride}\\\text{of antimony.}}}{SbOCl} + \underset{\substack{\text{Hydrochloric}\\\text{acid.}}}{2HCl}$$

The precipitate is now treated with carbonate of sodium, which converts it into oxide of antimony:—

$$\underset{\substack{\text{Oxychloride}\\\text{of antimony.}}}{2SbOCl} + \underset{\substack{\text{Sodium}\\\text{carbonate.}}}{Na_2CO_3} = \underset{\substack{\text{Oxide of}\\\text{antimony.}}}{Sb_2O_3} + \underset{\substack{\text{Sodium}\\\text{chloride.}}}{2NaCl} + \underset{\substack{\text{Carbon}\\\text{dioxide.}}}{CO_2}$$

Characters.—A greyish-white powder, insoluble in water, but soluble in hydrochloric acid.

OFFICIAL PREPARATION.

Pulvis Antimonialis.

Therapeutics.—Diaphoretic, alterative, and emetic. Given in fevers and inflammations.

Dose.—1 to 4 grains; of antimonial powder, 3 to 15 grains.

ANTIMONIUM TARTARATUM. $(KSbOC_4H_4O_6)_2H_2O$.

Tartarated Antimony.

An oxytartrate of antimony and potassium, also called tartar emetic.

Made by mixing oxide of antimony into a paste with acid tartrate of potassium and water. The paste is allowed to stand twenty-four hours, then boiled with water, filtered, then set aside to crystallise.

$$\underset{\substack{\text{Acid tartarate of}\\ \text{potassium.}}}{2KHC_4H_4O_6} + \underset{\substack{\text{Oxide of}\\ \text{antimony.}}}{Sb_2O_3} = \underset{\text{Tartarated antimony.}}{2KSbOC_4H_4O_6} + \underset{\text{Water.}}{H_2O}$$

Characters.—It forms transparent crystals, soluble in water. Heated on platinum it sparkles and chars, fusing the platinum. Its watery solution gives a white precipitate with hydrochloric acid, soluble in excess of the acid. No other common antimony salt behaves in this way.

OFFICIAL PREPARATIONS.

Vinum Antimoniale.
Unguentum Antimonii Tartarati.

Therapeutics.—Emetic, vascular, sedative, diaphoretic, and expectorant; given in fevers, inflammations, and bronchitis. Applied as ointment, it is an irritant, giving rise to pustules.

Dose.—As a diaphoretic and expectorant, $\frac{1}{16}$ to $\frac{1}{6}$ of a grain; as an emetic, 1 to 2 grains; wine 10 to 30 minims.

ARSENII IODIDUM. AsI_3.

Iodide of Arsenium.

Made by direct union of iodine and arsenium, or by mixing solutions of arsenious and hydriodic acids, and evaporating to dryness.

Characters.—Small orange-coloured crystals; soluble in water and alcohol. Heated, it entirely volatilises.

Therapeutics.—Given as an alterative in skin diseases.

Dose.—$\frac{1}{30}$ of a grain.

ALCOHOLS AND ALLIED SUBSTANCES.

SPIRITUS RECTIFICATUS. C_2H_5HO.

Rectified Spirit.

This is alcohol with 16 per cent. of water. To obtain it add yeast to a moderately dilute saccharine fluid, and keep the mixture at a temperature between 70° and 80° F.; it will soon effervesce, giving off CO_2, and producing alcohol. The alcohol is separated from the other products by distillation and rectification :—

$$\underset{\text{Grape sugar.}}{C_6H_{12}O_6} = \underset{\text{Alcohol.}}{2C_2H_5HO} + \underset{\substack{\text{Carbonic}\\\text{anhydride.}}}{2CO_2}$$

Characters.—A colourless fluid, sp. gr., ·838, burns with a pale-blue flame. Mixed with water it becomes warm, and yields a slight effervescence, due to expulsion of air from water; when it has cooled the mixture will be found to have undergone contraction of volume. The best reaction for alcohol is the iodoform test :—To a drachm of the alcohol add a few grains of iodine, then solution of potash till the colour is removed ; on dilution with water iodoform is at once deposited as a yellow powder, or crystals.

ALCOHOL ETHYLICUM.

Ethylic Alcohol.

Made from rectified spirit by macerating it with carbonate of potassium to remove water, then pouring it on to freshly-fused chloride of calcium, and distilling.

It should be kept in a well-stoppered bottle, as it soon absorbs water. If water be present, it can be easily detected by shaking the alcohol with dried sulphate of copper, which gives a blue colour if water be present.

Used to preserve chloroform, and to make solution of ethylate of sodium.

SPIRITUS TENUIOR.

Proof Spirit.

This is a weak alcohol, made by mixing 5 volumes of rectified spirit and 3 volumes water. Specific gravity, ·920.

Uses of Alcohol.—It is valuable as a solvent, preservative, and heating agent. Rectified and proof spirits are used in making the tinctures; the former where a strong spirit is required to dissolve the active constituents; the latter where the object can be obtained by the use of a weaker and cheaper spirit.

Therapeutics.—Alcohol first stimulates, then depresses; sometimes used to reduce temperature in fevers. Applied locally as a cooling lotion.

Dose.—Spirit. Rect., 2 to 4 drachms, diluted with water.

SPIRITUS VINI GALLICI.

French Brandy.

Spirit distilled from French wine; it contains from 40 to 60 per cent. alcohol, also some peculiar ethers, the principal of which is enanthic ether.

OFFICIAL PREPARATION.

Mistura Spiritus Vini Gallici.

Therapeutics.—Same as alcohol.

Dose.—$\frac{1}{2}$ to 2 ounces; same of the mixture.

VINUM XERICUM.

Sherry.

This is a Spanish wine, containing 16 to 18 per cent. alcohol. Its properties are similar to those of brandy, but it is much milder.

WINES MADE WITH SHERRY.

Vinum Aloes.
,, **Antimoniale.**
,, **Colchici.**
,, **Ferri.**

Vinum Ipecacuanhæ.
,, **Opii.**
,, **Rhei.**

VINUM AURANTII.

Orange Wine.

Made by fermentation, from sugar and the peel of the bitter orange. Contains 10 to 12 per cent. alcohol.

WINES MADE WITH ORANGE WINE.

Vinum Ferri Citratis.
Vinum Quininæ.

ÆTHER. $(C_2H_5)_2O$.

Ether.

This compound is the oxide of ethyl. It is made by the action of sulphuric acid upon alcohol; two stages occur in the change, thus:—

$$\underset{\text{Ethyl hydrate.}}{C_2H_5HO} + \underset{\substack{\text{Sulphuric}\\ \text{acid.}}}{H_2SO_4} = \underset{\substack{\text{Ethyl hydrogen}\\ \text{sulphate.}}}{C_2H_5HSO_4} + \underset{\text{Water.}}{H_2O}$$

In the second stage more alcohol acts upon the ethyl hydrogen sulphate, yielding ether and sulphuric acid:—

$$\underset{\substack{\text{Ethyl hydrogen}\\ \text{sulphate.}}}{C_2H_5HSO_4} + \underset{\substack{\text{Ethyl}\\ \text{hydrate.}}}{C_2H_5OH} = \underset{\substack{\text{Ether or}\\ \text{ethyl oxide.}}}{(C_2H_5)_2O} + \underset{\substack{\text{Sulphuric}\\ \text{acid.}}}{H_2SO_4}$$

This is called the continuous etherification process, as theoretically a molecule of sulphuric acid should change any quantity of alcohol into ether.

The distilled product is purified by shaking with slaked lime and chloride of calcium solution, to remove some water and sulphurous acid, then finally redistilled.

Characters.—Ether should have a sp. gr. of 0·735, and boil at about 105° F. Poured on paper, and allowed to evaporate, it should leave no odour. Shaken with sulphuric acid it should not darken. Water will dissolve 10 per cent. of ether.

PREPARATIONS CONTAINING ETHER.

Collodium.	Spiritus Ætheris.
„ Flexile.	„ „ Co.

Tinctura Chloroformi et Morphinæ.

Therapeutics.—Largely used as an anæsthetic, sometimes as a stimulant and antispasmodic; applied externally as a refrigerant.

Dose.—Of ether, 10 to 60 minims; of spirit of ether, ½ to 1 drachm.

ÆTHER PURUS.

Pure Ether.

Ether $(C_2H_5)_2O$, free from alcohol and water.

Made from ether by shaking with water to remove alcohol. The supernatant ether is decanted, and distilled with lime and chloride of calcium, which retain the water.

Characters.—Colourless, highly volatile, liquid; specific gravity, ·720. It should not liberate iodine from potassium iodide, and thus blue starch, showing absence of acids.

Therapeutics.—Same as ether, but being pure, this form only should be used for inhalation.

SPIRITUS ÆTHERIS COMPOSITUS.

Compound Spirit of Ether.

This is known as "Hoffmann's anodyne." It is made by mixing ethereal oil with spirit of ether.

The ethereal oil is made by mixing sulphuric acid and rectified spirit, allowing it to stand, then distilling. The distillate is shaken with lime water to neutralise acid; the supernatant liquor is then decanted, and exposed to the air.

Therapeutics.—Stimulant and antispasmodic.

Dose.—½ to 2 drachms.

SPIRITUS ÆTHERIS NITROSI.

Spirit of Nitrous Ether.

A spirituous solution of nitrous compounds, aldehyd, and other bodies.

To prepare it, alcohol, nitric and sulphuric acids, and copper, are placed together, and submitted to distillation. The distilled product is further diluted with rectified spirit.

Characters.—Spirit of nitrous ether is a variable product, undergoing changes by age. It is a transparent fluid, often with a slight tinge of yellow; has a peculiar penetrating odour, and sweet sharp taste. Specific gravity, ·840 to ·845. It is usually faintly acid, effervescing feebly when shaken with bicarbonate of sodium. In old specimens the acidity becomes so marked, that, on adding the spirit to iodide of potassium, iodine is liberated. To prevent that occurrence in dispensing, the spirit should be neutralised.

It should be capable of yielding at least five times its volume of nitric oxide gas when tested, as described in *Pharmaceutical Journal*, 3rd series, vol. xiii., p. 63.

Therapeutics.—Stimulant, diaphoretic, and diuretic; given in dropsies, fevers, and colds.

Dose.—½ to 2 drachms.

ÆTHER ACETICUS. $C_2H_5C_2H_3O_2$.

Acetic Ether.

This is the acetate of ethyl. Made by distilling a mixture of acetate of sodium, sulphuric acid, and alcohol.

$$\underset{\text{Ethyl hydrate.}}{C_2H_5HO} + \underset{\text{Sodium acetate.}}{NaC_2H_3O_2} + \underset{\text{Sulphuric acid.}}{H_2SO_4} = \underset{\text{Acetate of ethyl.}}{C_2H_5C_2H_3O_2}$$

$$+ \underset{\text{Acid sulphate of sodium.}}{NaHSO_4} + \underset{\text{Water.}}{H_2O}$$

The distillate is purified from acid and water, by digestion with carbonate of potassium for three days, then decanted.

Characters.—A clear liquid, with an agreeable odour. Specific gravity, about ·900. Warmed with caustic potash it forms alcohol and acetate of potassium.

Acetic ether is used as a solvent for cantharadine, the active principle of Spanish fly.

Dose.—20 to 60 minims.

ALCOHOL AMYLICUM. $C_5H_{11}HO$.

Amylic Alcohol.

Commonly known as fusel oil. It is a by-product of the manufacture of potato spirit. The sugar obtained from potato starch, in addition to ethylic alcohol, yields much amylic alcohol; they are separated by rectification; the amylic alcohol being heaviest is the last to distil.

Characters.—Amylic alcohol, if pure, is a colourless liquid, with a penetrating oppressive odour, and burning taste; sparingly soluble in water. Sp. gr., ·818.

Exposed to the air in contact with platinum black, it yields valerianic acid.

It is used in the manufacture of the valerianate of sodium and nitrite of amyl.

AMYL NITRIS. $C_5H_{11}NO_2$.

Nitrite of Amyl.

Obtained by the action of either nitric or nitrous acid upon amylic alcohol, and distilling:—

$$C_5H_{11}HO + HNO_2 = C_5H_{11}NO_2 + H_2O$$

Characters.—An ethereal liquid of a pale-yellow colour, and powerful, rather pleasant odour. Sp. gr., ·880. Insoluble in water, soluble in alcohol. Dropped upon fused caustic potash it forms valerianate of potassium.

Therapeutics.—Antispasmodic, used in asthma. A valuable remedy in angina pectoris. Inhaled it dilates the arterioles, quickens the heart's action, and causes marked flushing of the face.

Dose.—2 to 5 minims, by inhalation from cotton wool; or it may be diluted with spirits of wine, dropped upon sugar, and swallowed in doses of ½ to 1 minim.

CHLOROFORMUM. $CHCl_3$.

Chloroform.

Made by heating water and spirits of wine in a still to 100° F., then adding a mixture of chlorinated lime and slaked lime; the chloroform distils over into the receiver. The product is purified by washing, first with water, then with strong sulphuric acid; finally it is redistilled from slaked lime and chloride of calcium. A little alcohol is now added for its preservation.

The reactions producing chloroform are said to occur in three stages:—

(1) Chlorine reduces alcohol to aldehyd:—

$$\underset{\text{Alcohol.}}{C_2H_5HO} + \underset{\text{Chlorine.}}{Cl_2} = \underset{\text{Aldehyd.}}{C_2H_4O} + \underset{\text{Hydrochloric acid.}}{2HCl}$$

(2) More chlorine acts on the aldehyd to form trichloraldehyd, or chloral:—

$$\underset{\text{Aldehyd.}}{C_2H_4O} + \underset{\text{Chlorine.}}{6Cl} = \underset{\text{Trichloraldehyd.}}{C_2HCl_3O} + \underset{\text{Hydrochloric acid.}}{3HCl}$$

(3) Hydrate of lime converts the trichloraldehyd into chloroform and formate of lime:—

$$\underset{\text{Trichloraldehyd.}}{2C_2HCl_3O} + \underset{\text{Hydrate of lime.}}{Ca2HO} = \underset{\text{Chloroform.}}{2CHCl_3} + \underset{\text{Formiate of lime.}}{Ca(CHO_2)_2}$$

Characters.—Chloroform is a colourless liquid, sp. gr., 1·49, having an agreeable odour and sweet taste. It is freely soluble in alcohol and ether, sparingly in water. Its vapour is not combustible, but imparts a green colour to flame.

Shaken with strong sulphuric acid it should not be darkened; on evaporation it should leave no residue or unpleasant odour. These are tests for purity.

Commercial chloroform always contains a small percentage of alcohol, which manufacturers are obliged to add for its preservation. Pure chloroform rapidly becomes acid, and gives off irritating vapours.

Official Preparations.

Aqua Chloroformi.
Linimentum ,,
Tinctura ,, Co.
Tinctura Chloroformi et Morphinæ.
Spiritus Chloroform.

Therapeutics.—Narcotic and antispasmodic; also a stimulant and diaphoretic. It is most valued for its powerful anæsthetic properties. Applied externally it is a stimulant and rubefacient.

Doses.—Of pure chloroform by inhalation, 10 to 20 minims; in a mixture, 1 to 5 minims; of spirit of chloroform, 10 to 60 minims; of tincture of chloroform, 5 to 30 minims; of chloroform water, ½ to 2 fluid ounces; of tincture of chloroform and morphine, 5 to 10 minims.

CHLORAL HYDRAS. $C_2HCl_3H_2O_2$.

Hydrate of Chloral.

Made by passing a rapid stream of chlorine gas through alcohol for several days; at the end of the reaction chloral separates as an oily liquid, which is purified by treatment with sulphuric acid and lime. Water is added to the chloral, and combines to form chloral hydrate. The reactions are very complicated, but may be simplified thus :—

$$\underset{\text{Alcohol.}}{C_2H_5HO} + \underset{\text{Chlorine.}}{8Cl} = \underset{\text{Chloral.}}{C_2HCl_3O} + \underset{\text{Hydrochloric acid.}}{5HCl}$$

$$\underset{\text{Chloral.}}{C_2HCl_3O} + \underset{\text{Water.}}{H_2O} = \underset{\text{Chloral hydrate.}}{C_2HCl_3H_2O_2}$$

Characters.—Chloral hydrate forms distinct colourless crystals, of a pungent, pleasant odour, not deliquescent. It is soluble in less than its weight of water. Rubbed with solid camphor it forms an oily liquid. If 100 grains be dissolved in water, and distilled with 30 grains slaked lime, it should yield not less than 70 grains of chloroform ; by this treatment it is split up into chloroform and formate of lime. A simpler method of conducting this test has been pointed out by Cripps—viz., Dissolve the chloral hydrate in water, add caustic potash in excess, and note the volume of chloroform which separates. Chloral hydrate may contain alcoholate of chloral as an impurity.

OFFICIAL PREPARATION.

Syrupus Chloral.

Therapeutics.—Anodyne; hypnotic, and soporific ; given in spasmodic affections, asthma, and sleeplessness.

Dose.—10 to 30 grains ; of syrup, 1 to 3 drachms.

BUTYL-CHLORAL HYDRAS. $C_4H_5Cl_3O,H_2O$.

Hydrate of Butyl Chloral.

This compound is often wrongly called Croton-Chloral Hydrate. It is produced by the action of dry chlorine gas on aldehyd cooled to a temperature of 14° F., separated by fractional distillation, and the product (Butyl Chloral) converted into the solid hydrate by the addition of water :—

$$\underset{\text{Aldehyd.}}{2C_2H_4O} + \underset{\text{Chlorine.}}{6Cl} = \underset{\text{Butyl Chloral.}}{C_4H_5Cl_3O} + \underset{\text{Oxygen.}}{O} + \underset{\text{Hydrochloric Acid.}}{3HCl}$$

Characters and Tests.—A white, soft substance in crystalline pearly scales, having a pungent odour and acrid taste. Fuses about 172° F., solidifies about 160° F.; soluble in water, glycerine, and rectified spirit. Its solution in water does not yield chloroform when treated with caustic alkalies, thus differing from chloral hydrate.

Therapeutics.—Sedative, anæsthetic, and antispasmodic. Given in neuralgia due to carious teeth, causing anæsthesia of the fifth nerve. Dr. Ringer has found it useful in migraine.

Dose.—5 to 15 grains.

IODOFORMUM. CHI_3.

Iodoform.

It is made by boiling together, with suitable precautions, iodine, carbonate of potassium, and alcohol; at the end of the process, and as the mixture cools, iodoform separates.

Characters.—Golden-yellow crystalline scales of repulsive odour; slightly soluble in water, but soluble in about 10 parts ether. Heated it gives off violet-coloured vapours of iodine.

Therapeutics.—It is a valuable antiseptic and stimulant, largely used as a surgical dressing in the form of iodoform wool; also applied to syphilitic and other sores in the form of powder. The unpleasant smell of cancerous discharges is at once removed by an application of iodoform.

OFFICIAL PREPARATIONS.

Suppositoria Iodoformi.
Unguentum ,,

Dose.—$\frac{1}{2}$ to 3 grains.

HYDROCARBONS.

CREASOTUM.

Creasote.

A product of the distillation of wood tar.

Characters.—A yellowish liquid, of strong odour, darkens by age. Sparingly soluble in water, freely in alcohol, ether, and glacial acetic acid. Specific gravity, 1·071. It turns the plane of polarisation of a ray of polarised light to the right. It is miscible with collodion without giving a precipitate. It coagulates albumen. A 1 per cent. aqueous solution gives with one drop of neutral ferric chloride solution a green colour, soon changing to a reddish-brown.

Official Preparations.

Mistura Creasoti.
Unguentum ,,
Vapor ,,

Therapeutics.—Sedative to the stomach, allaying vomiting; the vapour checks expectoration in chronic bronchitis; placed in a hollow tooth it often allays toothache.

Dose.—1 to 3 minims in a pill; or ½ to 2 ounces of the mixture. Creasote forms an explosive combination with oxide of silver; hence they are incompatible.

PARAFFINUM DURUM.

Hard Paraffin.

Paraffin wax is usually obtained by distillation from shale, separation of the liquid oils by cooling and pressure, and purification of the solid product.

Characters.—A semi-transparent crystalline solid, odourless, slightly greasy to the touch. Insoluble in water, soluble in ether. It melts at 110° to 145° F., and burns with a bright flame.

Uses.—Employed as a substitute for wax in several of the ointments. Also useful for rendering corks waterproof.

PARAFFINUM MOLLE.

Soft Paraffin.

This substance, also known as Petrolatum and Paraffin Ointment, is a semi-solid mixture of soft paraffins; usually obtained by purifying the less volatile portions of petroleum.

Characters.—White or yellowish, unctuous, translucent and soft; free from acidity and alkalinity, gives no unpleasant odour when warmed to 120° F. Melts at 95° to 105° F., and volatilises without giving acrid vapours. Mixed on a porcelain slab with strong sulphuric acid, it should only give a slight brown colour; inferior qualities become quite black. It is not saponified with solutions of caustic alkalies.

Uses.—Mainly valued as an ointment base. Being unchangeable under ordinary influences, preparations made with it keep well. Sometimes used as a lubricant for surgical instruments.

Contained in the following ointments:—

Unguentum Acidi Borici
,, ,, Carbolici
,, ,, Salicylici
,, Eucalypti
,, Glycerini Plumbi Subacetatis
Unguentum Hydrargyri Oxidi Rubri.
Unguentum Hydrargyri Nitratis Dilutum.
Unguentum Potassæ Sulphuratæ
Unguentum Sulphuris Iodidi
,, Veratrinæ
Unguentum Zinci Oleati.

ORGANIC DIVISION.

It is advisable in studying this division of "Materia Medica" to observe the following order:—

1. Learn the botanical names and natural orders of the drugs, also the country from whence obtained.

2. The parts of the plant used, the characters by which they are known, and the active or proximate principles they contain.

3. The official preparations of each drug should be committed to memory, likewise their doses, and therapeutic actions.

Pharmacy will best and most naturally follow the above; it therefore is treated as a separate subject.

DEFINITIONS OF VEGETABLE GROUPS.

BALSAMS.

These may be defined as resinous, viscid, or solid substances, containing one or more aromatic acids. The aromatic acids are cinnamic and benzoic.

Official Balsams.—Peru, Tolu, Styrax, and Benzoin.

BULBS.

These are modified buds, generally subterranean, formed of scales overlapping each other.

Official Bulb.—Squill.

CORMS.

A corm is a solid underground stem.

Official Corm.—Colchicum.

FLOWERS.

A flower is generally that part of a plant containing reproductive organs.

Official Flowers.—Clove, which is a flower-bud; Santonica and Chamomile, which are flower-heads; and Elder Flowers. As parts of flowers there are the petals of the Red Poppy, French Rose, Cabbage Rose; stigma and style of Saffron. Of flowering tops, Indian Hemp and Kousso.

FRUITS.

Fruits consist of the pistil and ovary, with the seeds in the interior.

Official Fruits.—The Fig, Prune, Bael, Capsicum, Dog Rose, Squirting Cucumber, Caraway, Dill, Coriander, Conium, Fennel, Anise, Star Anise, Orange, Lemon, Cubebs, Pepper, Pimento, Poppy Heads, Raisins.

FUNGI.

These are flowerless plants, without stamens or pistil; they have sexual organs producing spores.

One fungus is official, viz., Ergot, in the mycelium or spawn state.

GUMS.

Gums are natural exudations, soluble in water, insoluble in alcohol. They generally contain Arabin.

Official Gums.—Acacia, and Tragacanth.

GUM RESINS.

These are natural mixtures of gum and resin, partly soluble in water, partly in alcohol.

Official Gum Resins.—Ammoniacum, Asafœtida, Galbanum, Myrrh, Gamboge, Scammony.

GALLS.

These are excrescences produced by insects. The official example is Oak Gall.

LEAVES.

These are appendages to the stems of plants, and constitute the chief breathing organs.

Official Leaves.—Aconite, Belladonna, Bearberry, 3 species of Buchu, Cherry Laurel, Conium, Digitalis, Hyoscyamus, Tobacco, Matico, Coca, Jaborandi.

LICHENS.

These are terrestrial plants composed of a thallus, the fructification appearing as a protuberance on the thallus.

Official Lichen. — Cetraria, the so-called Iceland " Moss."

OLEO-RESINS.

Defined as compounds of a volatile oil and resin. The former is separable by distillation.

Official Oleo-Resins.—Canada Turpentine, Copaiba, American Frankincense, Oleoresin of Cubebs.

OILS (FIXED OILS).

These are natural fats, or glycerides, generally obtained by expression. They unite with alkalies to form soaps.

Official Fixed Oils.—Almond, Croton, Castor, Cod Liver, Linseed, Theobroma, Olive, Nutmeg.

OILS VOLATILE.

These are ethereal bodies, and the odorous principles of plants; they easily volatilise. Most of them are obtained by distillation.

Official Volatile Oils.—Aniseed, Dill, Chamomile, Cajuput, Caraway, Cloves, Cinnamon, Copaiva, Coriander, Cubebs, Juniper, Lavender, Lemon, Peppermint, Spearmint, Nutmeg, Pimento, Rosemary, Rue, Savin, Mustard, Turpentine, Sandal Wood, Eucalyptus, and Fir Wool.

STEAROPTENES.

The solid portions of volatile oils. They are usually separable by lowering the temperature of the volatile oil, and pressing out the liquid portion.

Official Stearoptenes.—Menthol, Thymol, Camphor.

BARKS AND PEELS.

These form the envelope or covering, either of root, stem, or fruit.

Official Barks.—Canella, Cascarilla, various Cinchonas, Cinnamon, Cusparia, Bebeeru, Mezereon, Oak, Larch, Pomegranate, Frangula, and Sacred. The peels are Lemon and Orange.

ROOTS.

These form the descending axes of plants.

Official Roots.—Aconite, Belladonna, Calumba, Dandelion, Gentian, Hemidesmus, Horseradish, Liquorice, Pareira, Pellitory, Rhatany, Rhubarb, Sassafras, Scammony, Senega, Sumbul, Ipecacuanha.

RHIZOMES.

These are horizontal stems, giving off roots from the under, and leaves from the upper side.

Official Rhizomes.—Ginger, Male Fern, Turmeric, Arnica, Green Hellebore, Podophyllum, Serpentary, Valerian, Cimicifuga, Yellow Jasmine.

SEEDS.

A seed is a fully matured ovule, containing the embryo.

Official Seeds.—Sweet and Bitter Almonds, Cevadilla, Nux Vomica, Nutmeg, Cardamoms, Colchicum, Calabar Bean, White and Black Mustard, Stramonium, Wheat, Linseed, Pearl Barley, Castor, Croton, and Stavesacre.

STROBILE.

This is a term signifying a cone.

Official Strobile.—Hop.

TUBERCULE.

A swollen underground root.

Official Tubercule.—Jalap.

VEGETABLE KINGDOM.

CLASS I.—DICOTYLEDONS OR EXOGENS.

* N.O. RANUNCULACEÆ.

Botanical name.	Parts used.	Habitat.
ACONITUM NAPELLUS.	Leaves and root.	Indigenous.
PODOPHYLLUM PELTATUM.	Rhizome.	U. States.
DELPHINIUM STAPHISAGRIA.	Seeds.	S. Europe.
CIMICIFUGA RACEMOSA.	Rhizome.	U. States.

ACONITI FOLIA.

Aconite Leaves.

The fresh leaves and flowering tops of *Aconitum Napellus*, commonly known as Monkshood, gathered when about one-third of the flowers are expanded, from plants cultivated in Britain.

Characters.—Leaves alternate, with long channelled stalks, very deeply cut palmately into 3 or 5 segments, which are again deeply and irregularly divided into oblong acute narrow lobes; exciting slowly, when chewed, a sensation of tingling and numbness. Flowers large, irregular, deep blue, in a somewhat loose terminal raceme.

ACONITI RADIX.

Aconite Root.

The root of *Aconitum Napellus*, collected in the winter or early spring before the leaves have appeared, from plants cultivated in Britain, and carefully dried; or imported in a dried state from Germany.

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* N.O. means Natural Order.

Characters.—Usually from about two to three inches long, and from half to three-quarters of an inch thick at the upper extremity, where it is usually crowned with the remains of the base of the stem; conical in form, much shrivelled longitudinally, and more or less covered with the scars or bases of broken rootlets; dark-brown externally, whitish within, and having a central cellular axis with about seven rays. No marked odour; taste at first somewhat bitterish-sweet, but exciting, when chewed, a sensation of tingling and numbness, with severe dryness of the throat.

The active principle is an alkaloid called *aconitine;* in addition there is said to be present *pseudaconitine*, *picraconitine*, and *aconitic acid.*

OFFICIAL PREPARATIONS.

Extractum Aconiti.	**From the Leaves.**
Aconitina	,, ,, **Root.**
Linimentum Aconiti.	,, ,, ,,
Tinctura ,,	,, ,, ,,

ACONITINA, *Aconitine.*—Made by dissolving an alcoholic extract of aconite-root in water, to precipitate resinous matter, then adding ammonia to the clear solution. This treatment throws down the aconitine as a precipitate; the precipitate is dissolved in ether, and the ether distilled off, leaving the aconitine as a residue; the residue is now dissolved in dilute sulphuric acid, and the aconitine finally precipitated by ammonia, washed, and dried.

Characters.—A white solid of alkaline reaction; rubbed on the skin, it causes a tingling or pricking sensation. It is a most powerful poison.

Official Preparation.

Unguentum Aconitinæ.

Therapeutics.—Cardiac sedative and diaphoretic; given in fevers, dropsy, and whooping cough. The liniment and ointment are applied locally, to diminish pain in neuralgia and rheumatism. A powerful cardiac poison. Stops the heart in wide diastole.

Dose.—Tincture, 5 to 15 minims; extract, $\frac{1}{2}$ to 2 grains. Aconitine is rarely given internally, as it varies in strength. The author has seen $\frac{1}{100}$ of a grain prescribed.

PODOPHYLLI RHIZOMA.

Podophyllum Rhizome.

The dried rhizome and rootlets of *Podophyllum peltatum* or May apple.

Characters.—In pieces of variable length, and from about one-fifth to one-third of an inch thick; flattened-cylindrical, presenting at varying intervals large irregular tuberosities, which are marked above by a depressed circular scar, and giving off below brownish rootlets, or, if these are broken off, presenting a corresponding number of whitish scars; dark reddish-brown or reddish-yellow; smooth or somewhat wrinkled; breaking with a short fracture, internally whitish and mealy.

Official Preparation.

Podophylli Resina.

This resin is made by exhausting the rhizome with rectified spirit. Most of the spirit is removed by distillation, and the remaining liquor poured into water, when the resin separates and deposits. It is washed and dried.

Characters.—An amorphous powder, varying in colour from pale-yellow to deep orange-brown; soluble in rectified spirit, and in ammonia; precipitated from the former solution by water, from the latter by acids. Partly soluble in pure ether.

Official Preparation of Resin.

Tinctura Podophylli.

Therapeutics.—Purgative and cholagogue; given in dropsies and congestion of the liver, useful in obstinate constipation. Generally prescribed with aloes and rhubarb.

Dose.—Powdered root, 10 to 20 grains; resin, $\frac{1}{4}$ to 1 grain; tincture, 15 minims to 1 drachm.

STAPHISAGRIÆ SEMINA.

Stavesacre Seeds.

The dried ripe seeds of *Delphinium Staphisagria.*

Characters.—Irregularly triangular or obscurely quadrangular, arched, blackish-brown when fresh, but becoming dull greyish-brown by keeping. Testa wrinkled and deeply pitted; nucleus soft, whitish, oily. No marked odour; taste nauseously bitter and acrid. They contain much fixed oil, also a poisonous alkaloid *delphinine.*

Official Preparation.

Unguentum Staphisagriæ.

Therapeutics.—Used in the form of ointment, for destroying pediculi.

CIMICIFUGÆ RHIZOMA.

Cimicifuga Rhizome.

The dried rhizome and rootlets of *Cimicifuga racemosa.*

Characters.—The rhizome is from about two to six inches long, and from half an inch to an inch thick, hard, somewhat flattened-cylindrical in form, having on its upper surface the remains of several aerial stems, and below numerous small wiry brittle branched rootlets, which in commercial specimens are more or less broken off. Both rhizome and rootlets are brownish-black, almost odourless, and of a bitter slightly acrid taste. Their fracture is close, that of the rootlets presenting a thick bark, and a central axis with from three to five, usually four, converging woody wedges, so as to assume a triangular, cross-like, or stellate appearance.

OFFICIAL PREPARATIONS.

Extractum Cimicifugæ Liquidum.
Tinctura Cimicifugæ.

Therapeutics.—Given in rheumatic fever, chorea, and lumbago.

Dose.—Extract, 3 to 30 minims; tincture, 15 to 60 minims.

N.O. MAGNOLIACEÆ.

Botanical name.	Part used.	Habitat.
ILLICIUM ANISATUM.	Fruit.	China.

ANISI STELLATI FRUCTUS.

Star Anise Fruits.

Star anise fruits are cultivated in China. They are formed of eight one-seeded carpels, spread in a radiate whorl round a central column. A variety exported from Japan is said to be poisonous.

Star anise fruits are used for the preparation of the essential oil of aniseed, the oil being identical with that obtained from the aniseed fruits of the order *umbeliferæ*, under which order its uses will be found.

N.O. MENISPERMACEÆ.

Botanical name.	Part used.	Habitat.
JATEORHIZA CALUMBA.	Root.	East Africa.
CHONDRODENDRON TOMENTOSUM.	Root.	Brazil.

CALUMBA RADIX.

Calumba Root.

Occurs in flat pieces, circular or oval in outline, concave on the surface; thickness $\frac{1}{8}$ to $\frac{1}{2}$ an inch, diameter 1 to 2 inches, colour greenish-yellow. Three distinct principles have been found in calumba, viz., *calumbin*, *calumbic acid*, and *berberine*. Much starch is present in the root.

OFFICIAL PREPARATIONS.

Extractum Calumbæ.
Infusum „
Tinctura „

Contained in Mist. Ferri Aromat.

Therapeutics.—A bitter stomachic tonic, given in dyspepsia and debility.

Doses.—Extract, 2 to 10 grains; infusion, $\frac{1}{2}$ to 2 ounces; tincture, $\frac{1}{2}$ to 2 drachms.

Adulteration.—The roots of *Coscinium fenestratum* and *Frasera Walteri* have been substituted for Calumba. The first is easily distinguished by its bright yellow colour, and prominent medullary rays; the latter by the small proportion of starch it contains.

PAREIRÆ RADIX.

Pareira Root.

The dried root of *Chondrodendron tomentosum.*

Characters and Test.—In long nearly cylindrical more or less twisted pieces, from about three-quarters of an inch to two or more inches thick; covered with a thin blackish-brown bark, and marked externally with longitudinal furrows and transverse ridges and fissures. Internally yellowish- or brownish-grey, with well-marked concentric or more or less eccentric circles of porous wood, separated into wedge-shaped portions by large medullary rays, and when cut presenting a waxy appearance. No odour, taste bitter. Its decoction, when cold, is turned inky bluish-black by solution of iodine.

Pareira contains a principle termed *pelosine*, said to be identical with *beberine* from Bebeeru bark.

OFFICIAL PREPARATIONS.

Decoctum Pareiræ.
Extractum Pareiræ.
„ „ Liquidum.

Therapeutics.—Bitter tonic, also diuretic. Sedative to the bladder.

Dose.—Decoction, ½ to 2 ounces; extract, 10 to 20 grains; liquid extract, ½ to 2 drachms.

N.O. PAPAVERACEÆ.

Botanical name.	Parts used.	Habitat.
PAPAVER RHŒAS.	Petals.	Indigenous.
„ SOMNIFERUM.	Dried Juice.	Asia Minor.
„ „ (ENGLISH).	Capsules.	Indigenous.

RHŒADOS PETALA.

Red-Poppy Petals.

The fresh petals of *Papaver Rhœas*. From indigenous plants.

Characters.—Of a bright scarlet colour, often nearly black at the base, unequal in size, with a strong narcotic odour, and slightly bitter taste.

OFFICIAL PREPARATION.

Syrupus Rhœados.

Therapeutics.—A very mild sedative, given to infants in coughs, but mainly used as a colouring agent.

Dose.—Syrup, ½ to 2 drachms.

OPIUM.

Opium.

The inspissated juice of the unripe fruit of the *Papaver somniferum*.

Opium is obtained by making incisions into the rind of the poppy capsule, taking care not to cut right through, as the juice would flow inside, and mix with the seeds. The cutting is done in the evening, next morning the tears are scraped off, formed into a cake, and covered with poppy leaves, then dried.

The following varieties of opium are known:—*Smyrna*, *Egyptian*, *Persian*, *East Indian.*

SMYRNA OPIUM.—Occurs in cakes from ½ to 2 lb. in weight, covered with leaves, and the brown fruits of a species of *Rumex*. Broken asunder its colour is usually dark-brown, and odour narcotic. It yields 8 to 14 per cent. morphine.

EGYPTIAN OPIUM.—Forms hard flat cakes, covered with a leaf; but without rumex fruits. It is of very inferior quality, and now rarely met with.

PERSIAN OPIUM.—May be seen either in conical balls, or slender sticks, sometimes greasy and polished on the surface, or wrapped in paper, fig leaves, and vine leaves. Its quality varies, yielding from 3 to 12 per cent. morphine.

EAST INDIAN OPIUM.—This kind is cultivated in British India, and formed into balls weighing about four pounds, covered with a thick layer of poppy leaves. Most of it is sent to China, and not found in English commerce.

Chemical Composition of Opium.—Opium contains a large number of crystalline bodies, the more important of which are alkaloids. The more important of these alkaloids are in combination with *meconic acid.*

OPIUM ALKALOIDS.

Morphine.
Codeine.
Narceine.
Thebaine.
Papaverine.
Narcotine.
Meconine.
Rhœadine.

In addition it contains acetic acid, resin, caoutchouc, essential oil, and gum.

The bodies known as *apomorphine* and *apocodeine* are not present in opium, but are derivatives made from morphine and codeine.

Any ordinary variety of opium may be employed as a source of its alkaloids; but for officially recognised purposes opium must be that obtained in Asia Minor, and of such a strength that, when dried and powdered and the powder heated to 212° F. until it ceases to lose moisture, and the product tested by the appended method, or any trustworthy method, it shall yield, as nearly as practicable, 10 per cent. of morphine; that is, 100 parts of such dry powdered opium shall yield not less than 9·5 parts, and not more than 10·5 parts of morphine.

The following is the official process for the assay of opium:—

Take of

Powdered opium, dried at 212° F. . . .	140 grains
Lime, freshly slaked	60 grains
Chloride of ammonium . . .	40 grains
Rectified spirit Ether Distilled water } of each . . .	a sufficiency

Triturate together the opium, lime, and 400 grain-measures of distilled water in a mortar until a uniform mixture results; then add 1000 grain-measures of distilled water, and stir occasionally during half an hour. Filter the mixture through a plaited filter about three inches in diameter into a wide-mouthed bottle or stoppered flask (having the capacity of about six fluid ounces and marked at exactly 1040 grain-measures) until the filtrate reaches this mark. To the filtered liquid (representing 100 grains of opium) add 110 grain-measures of rectified spirit and 500 grain-measures of ether, and shake the mixture; then add the chloride of ammonium, shake well and frequently during half an hour, and set it aside for twelve hours. Counterbalance two small filters; place one within the other in a small funnel, and decant the ethereal layer as completely as practicable upon the inner filter. Add 200 grain-measures of ether to the contents of the bottle and rotate it; again decant the ethereal layer upon the filter, and afterwards wash the latter with 100 grain-measures of ether added slowly and in portions. Now let the filter dry in the air, and pour upon it the liquid in the bottle in portions, in such a way as to transfer the greater portion of the crystals to the filter. When the fluid has passed through the filter, wash the bottle and transfer the remaining crystals to the filter, with several small portions of distilled water, using not much more than 200 grain-measures in all, and distributing the portions evenly upon the filter. Allow the filter to drain, and dry it, first by pressing between sheets of bibulous paper, and afterwards at a temperature between 131° and 140° F., and, finally, at 194° to 212° F. Weigh the crystals in the inner filter, counterbalancing by the outer filter. The crystals should weigh ten grains, or not less than nine and a half or not more than ten and a half grains, corresponding to about 10 per cent. of morphine in the dry powdered opium.

MORPHINE.—This is the chief alkaloid of opium, and made by adding calcium chloride to a strong watery solution of opium, then evaporating, till on cooling, it forms a solid mass. The mass is now pressed in calico, and the pressed cake dissolved in boiling water, allowed to cool and solidify, and again pressed; the pressed cake, which is mainly hydrochlorate of morphine, is again dissolved in water, and last traces of colour removed by addition of animal charcoal. The solution is finally treated with ammonia, which precipitates the morphine as the pure alkaloid.

In the above process, on adding the calcic chloride, a double decomposition occurs; meconate of lime is formed and chiefly remains in solution, whilst hydrochlorates of the alkaloids separate, the least soluble of which is morphine, therefore the first to solidify. The final steps are means of purification.

Characters.—Morphine forms white crystals, sparingly soluble in water, soluble in alcohol, insoluble in chloroform and ether.

Tests.—(1) With ferric chloride it gives a dull blue; (2) With strong nitric acid it gives an orange-red colour.

CODEINE.—An alkaloid separated from the ammoniacal liquors left after extracting morphine, by evaporating, treating the residue with water, precipitating the codeine with caustic potash, and crystallising from ether.

Characters and *Tests.*—In octahedral crystals, soluble in 80 parts water. Dissolves in sulphuric acid forming a colourless solution, which, on warming with molybdate of ammonium or a trace of ferric chloride, gives a blue colour.

MORPHINÆ HYDROCHLORAS.—Made by neutralising pure morphine with hydrochloric acid, and crystallising.

MORPHINÆ ACETAS.—Made by precipitating pure morphine from the hydrochlorate by means of ammonia, neutralising the precipitate with acetic acid, and crystallising.

MORPHINÆ SULPHAS.—Made by diffusing pure morphine in hot water, and adding diluted sulphuric acid till neutral. The solution, on cooling, deposits crystals.

APOMORPHINÆ HYDROCHLORAS.—The hydrochlorate of an alkaloid, obtained by heating morphine or codeine in sealed tubes, with hydrochloric acid.

Characters and Tests.—Small, greyish-white, shining, acicular crystals, turning green on exposure to light and air. From solutions, bicarbonate of sodium throws down a precipitate, which becomes green on standing and then forms a purple solution with ether, violet with chloroform, and bluish-green with alcohol. With dilute solution of perchloride of iron it gives a deep red, and with nitric acid a blood-red coloration.

Official Preparations of Opium.

Codeina	
Confectio Opii	1 part in 40, nearly
Emplastrum Opii	1 part in 10
Enema Opii	½ fl. drm. tincture to 2 fl. oz.
Extractum Opii	about 1 part from 2
,, ,, Liquidum	22 grs. extract in 1 fl. oz. nearly
Linimentum Opii	1 volume tincture in 2 volumes
Morphinæ Acetas	about 1 part from 8 or 10
,, Acetatis Liquor	4½ grs. acetate in 1 fl. oz.
,, Bimeconatis Liquor	5½ grs. bimeconate in 1 fl. oz.
,, Hydrochloras	about 1 part from 8 or 10
,, Hydrochloratis Liquor	4½ grs. hydrochlorate in 1 fl. oz.
,, Sulphas	about 1 part from 7½
Pilula Ipecacuanhæ cum Scilla	1 part in 23, nearly
,, Plumbi cum Opio	1 part in 8
,, Saponis Composita	1 part in 6, nearly
Pulvis Cretæ Aromaticus cum Opio	1 part in 40
,, Ipecacuanhæ Compositus	1 part in 10
,, Kino Compositus	1 part in 20
,, Opii Compositus	1 part in 10
Suppositoria Plumbi Composita	1 grain in each suppository
Tinctura Camphoræ Composita	2 grains to 1 fluid ounce
Tinctura Opii	33 grains to 1 fl. ounce, nearly
,, ,, Ammoniata	5 grains to 1 fluid ounce.

Trochisci Opii . . .	$\frac{1}{10}$ grain of extract in each
Unguentum Gallæ cum Opio	32 grains to 1 ounce
Vinum Opii . . .	22 grs. extract in 1 fl. oz. nearly.

Official Preparation of Apomorphine.

Injectio Apomorphinæ Hypodermica.

Official Preparations of Hydrochlorate of Morphine.

Liquor Morphinæ Hydrochloratis	1 grain in 100 fluid grains
Suppositoria Morphinæ .	$\frac{1}{2}$ grain to each suppository
" " cum Sapone . . .	$\frac{1}{2}$ grain to each suppository
Tinctura Chloroformi et Morphinæ . . .	1 grain in 1 fluid ounce
Trochisci Morphinæ . .	$\frac{1}{36}$ grain in each lozenge
" " et Ipecacuanhæ . . .	$\frac{1}{36}$ grain in each lozenge

Official Preparations of Acetate of Morphine.

Injectio Morphinæ Hypodermica	1 grain in 10 minims
Liquor Morphinæ Acetatis .	1 grain in 100 fluid grains

Therapeutics of Opium.—In small doses opium is a stimulant, in large doses a powerful sedative to the brain and nervous system; under its influence the pupils of the eye become contracted. It is given in inflammation, sleeplessness, diarrhœa, and coughs, also to lessen the amount of urine in diabetes. The liniment and plaster are applied to painful parts.

Therapeutics of Morphine Salts.—Their action is somewhat similar to that of opium, but they cause less headache, nausea, and constipation; it is much administered by injection under the skin, which causes less disturbance than when taken by the stomach.

Codeine is sometimes given with success in diabetes.

Apomorphine is a valuable and powerful emetic, useful in cases of poisoning and malingering.

Doses.—Opium in powder or pill, ¼ to 3 grains; extract of opium, ¼ to 2 grains; liquid extract of opium, 5 to 40 minims; tincture of opium, 5 to 40 minims; wine of opium, 5 to 40 minims; ammoniated tincture of opium, ½ to 2 drachms; compound tincture of camphor, 20 to 60 minims; confection of opium, 5 to 20 grains; aromatic powder of chalk and opium, 10 to 60 grains; compound kino powder, 5 to 20 grains; compound opium powder, 3 to 20 grains; compound soap pill, 3 to 5 grains; lead and opium pill, 3 to 8 grains; ipecac. and squill pill, 5 to 15 grains; of opium lozenges, 1 to 4.

Doses of Morphine.—Of acetate hydrochlorate, or sulphate, ⅛ to 1 grain; of solution of acetate, hydrochlorate, or meconate of morphine, 10 to 40 minims; of morphine or morphine and ipecac. lozenges, 1 to 4; of hypodermic injection of morphine (under the skin), 2 to 10 minims; of hydrochlorate of apomorphine injection, 2 to 10 minims.

Dose of Codeine.—¼ to 2 grains.

PAPAVERIS CAPSULÆ.

Poppy Capsules.

The nearly ripe dried capsules of *Papaver somniferum*. From plants cultivated in Britain.

Characters.—Rounded, ovoid-rounded, or somewhat oblong, from two to three inches in diameter, suddenly contracted below into a neck, and crowned above by the stellately-arranged stigmas; yellowish or yellowish-brown externally, and frequently dotted with blackish spots. Presenting internally a variable number of thin, brittle, parietal placentas, directed towards the centre of the cavity, and a very large number of loose, small, reniform, whitish, slate-coloured, or nearly black seeds. Inodorous; taste, slightly bitter.

OFFICIAL PREPARATIONS.

Decoctum Papaveris.
Extractum Papaveris.
Syrupus Papaveris.

Therapeutics.—Same as opium, but much weaker. The syrup is given to allay cough. The decoction is used warm, as a local anodyne.

Dose.—Of syrup, ½ to 2 fluid drachms; of extract, 2 to 5 grains.

N.O. CRUCIFERÆ.

Botanical name.	Parts used.	Habitat.
BRASSICA NIGRA.	Seeds.	Europe.
,, ALBA.	,,	,,
COCHLEARIA ARMORACIA.	Root.	,,

SINAPIS NIGRÆ SEMINA.

Black Mustard Seeds.

The dried ripe seeds of *Brassica nigra.* From plants cultivated in Britain.

Characters.—Scarcely half the size of white mustard seeds, or not more than about one twenty-fifth of an inch in diameter; roundish, dark reddish- or greyish-brown, finely pitted, hard; internally yellow. Inodorous when dry, even when powdered, but when triturated with water exhaling a strong pungent odour so as to affect the eyes; taste very pungent.

SINAPIS ALBÆ SEMINA.

White Mustard Seed.

The dried ripe seeds of *Brassica alba.* From plants cultivated in Britain.

Characters.—About one-twelfth of an inch in diameter, roundish, pale-yellow, very finely pitted, hard; internally yellow, oily. Inodorous; taste pungent.

Both varieties of mustard yield by pressure a fixed oil, but the black variety only, produces the essential oil of mustard, and by the following changes:—Black mustard contains *sinigrin* and *myrosin*; these in contact with water decompose, yielding essential oil of mustard, hydric potassium sulphate, and sugar. The essential oil consists of *sulphocyanide of allyl*; it has a pale-yellow colour and acrid smell; applied to the skin it almost instantly blisters.

White mustard contains *sinalbin* and *myrosin*; these in contact with water yield a fixed pungent body, called *sulphocyanate of acrinyl*, also some sulphate of sinapine and sugar.

SINAPIS.

Mustard.

Black mustard seeds and white mustard seeds powdered and mixed.

Characters and Test.—A greenish-yellow powder, of an acrid, bitterish, oily, pungent taste, scentless when dry, but exhaling when moist a pungent, penetrating, peculiar odour, very irritating to the nostrils and eyes. A decoction cooled is not made blue by tincture of iodine.

OFFICIAL PREPARATIONS.

Cataplasma Sinapis.
Charta Sinapis.
Oleum Sinapis.

Therapeutics.—Mustard is given internally as an emetic, used locally as a stimulant, counter-irritant, and vesicant. Applied to the chest in bronchitis, pneumonia, and pleurisy, also to the face to relieve neuralgia. Mustard leaves are applied to any part to relieve pain.

Dose.—As an emetic, 1 to 4 drachms, in water.

ARMORACIÆ RADIX.

Horseradish Root.

The fresh root of *Cochlearia Armoracia.* From plants cultivated in Britain, and most active in the autumn and early spring before the leaves have appeared.

Characters.—Nearly cylindrical, except at the upper end, where it is enlarged and conical, and marked in an annulated manner by the scars of fallen leaves. It is from half an inch to about an inch in diameter, and commonly a foot or more in length; pale yellowish-white, or brownish-white externally, whitish and fleshy within. Taste very pungent, but inodorous except when scraped or bruised, when it exhales a characteristic pungent. odour. These characters enable it to be easily distinguished from aconite roots. The pungent odour is due to an essential oil, identical with that obtained from black mustard.

OFFICIAL PREPARATION.

Spiritus Armoraciæ Co.

Therapeutics.—Same as mustard; the spirit is employed as a diuretic in dropsies.

Dose.—Of spirit, ½ to 2 drachms.

N.O. CANELLACEÆ.

Botanical name.	Part used.	Habitat.
CANELLA ALBA.	Bark.	Bahamas.

CANELLÆ CORTEX.

Canella Bark.

Canella bark is found in quills, 2 to 8 inches long; externally it is of a bright buff colour, internally it is whitish; bruised it gives an agreeable cinnamon-like smell. It yields a volatile oil and unexamined bitter principle.

Uses.—Forms an ingredient of Vinum Rhei, acting as a stomachic tonic.

N.O. POLYGALACEÆ.

Botanical name.	Part used.	Habitat.
POLYGALA SENEGA.	Root.	United States.
KRAMERIA TRIANDRA.	Root.	Peru.
„ IXINA.	Root.	Savanilla.

SENEGÆ RADIX.

Senega Root.

The dried root of *Polygala Senega.*

Characters.—Enlarged at the upper end into an irregular knotty tuberosity which bears the remains of numerous small stems, and tapering below into a more or less twisted or curved, branched, and usually keeled root, from one-fifth to more than one-third of an inch thick. Bark yellowish- or brownish-grey, transversely cracked, horny, translucent; enclosing an irregular whitish central woody column. Fracture short, brittle; odour of bark peculiar, rancid, and its taste at first sweetish, but afterwards very acrid, sourish, and causing a flow of saliva; wood tasteless and inodorous.

The chief constituents of the root are *senegin* and *sapogenin;* pectin, gum, and sugar are present.

OFFICIAL PREPARATIONS.

Infusum Senegæ.
Tinctura Senegæ.

Therapeutics.—Stimulant, expectorant, diaphoretic, and diuretic; given in chest affections, bronchitis, and dropsy.

Dose.— Infusion, ½ to 2 ounces; tincture, ½ to 2 drachms.

Adulteration.—Senega from careless collection has been found to contain other roots. Of these may be mentioned *Panax quinquefolium*, a spindle-shaped root; also the rhizome of *Cypripedium pubescens.*

KRAMERIÆ RADIX.

Rhatany Root.

The dried root of (1) Peruvian Rhatany, *Krameria triandra*, or of (2) Savanilla Rhatany, *Krameria Ixina.*

Characters.—1. Peruvian rhatany is in branched or unbranched pieces, varying in length and thickness. It consists of a readily separable bark, which varies in thickness from about one-twentieth to one-tenth of an inch, rough and scaly except in the smaller pieces, dark reddish-brown externally, and bright brownish-red on its inner surface; and having a hard brownish- or reddish-yellow woody axis. 2. Savanilla rhatany is less irregular and knotty, and not so long or thick as the former. It is well characterised by its dark-purplish or violet colour, and its smooth and thicker bark, which adheres firmly to the wood beneath, and is usually marked at irregular intervals by deep transverse cracks. The bark of both kinds has a strongly astringent taste, and when chewed tinges the saliva red, but it has no marked colour. The wood is nearly tasteless and inodorous.

The bark of these roots contains about 20 per cent. of *rhatany tannic acid*, also rhatany red.

OFFICIAL PREPARATIONS.

Extractum Krameriæ.
Infusum Krameriæ.
Tinctura Krameriæ.

Contained in Pulvis Catechu Co.

Therapeutics.—Powerful astringent, useful in diarrhœa and dysentery. The tincture in water is a useful wash for spongy and bleeding gums.

Doses.—Powder, 20 to 60 grains; extract, 5 to 20 grains; infusion, 1 to 2 ounces; tincture, ½ to 2 drachms.

N.O. LINACEÆ.

Botanical name.	Part used.	Habitat.
LINUM USITATISSIMUM.	Seeds.	Britain.

LINI SEMINA.

Linseed.

These are the seeds of the common flax; in form they are ovoid and flattened; have a brown, polished, glossy surface, which under a lens is seen to be marked with extremely fine pits. By expression linseed yields about 33 per cent. of a fixed oil; the seeds also contain a considerable quantity of mucilaginous matter. The seeds, when powdered, form linseed meal.

OFFICIAL PREPARATIONS.

Farina Lini.
Cataplasma Lini.
Infusum ,,
Oleum ,,

Therapeutics.—The infusion of linseed is given internally as a demulcent in coughs and diseases of the urinary organs. The poultice is a valuable application to inflamed parts. A mixture of the oil and lime water is called carron oil, and was at one time largely used for treating burns; olive oil has now taken the place of the linseed oil, for this purpose.

Dose.—Infusion, ½ to 4 ounces.

Adulteration.—T. Greenish has pointed out the presence of numerous seeds of the order Cruciferæ in linseed; they are easily detected by a sharp eye. If present in linseed meal, it should be examined by the microscope; or a portion of the meal may be mixed with water, and should not evolve a pungent odour, showing absence of mustard.

N.O. GUTTIFERÆ.

Botanical name.	Part used.	Habitat.
GARCINIA HANBURII.	Gum Resin.	Siam.

CAMBOGIA.

Gamboge.

A gum-resin obtained from *Garcinia Hanburii.*

Characters and Tests.—In cylindrical, solid, or hollow rolls, longitudinally striated on the surface, and either distinct, or more or less agglutinated or folded together into masses; breaking with a conchoidal fracture, the fractured surface being opaque, smooth, and of a uniform reddish-yellow colour; powder bright-yellow; no odour; taste very acrid. When rubbed with water forming a yellow emulsion; it is completely dissolved by the successive action of rectified spirit and water; and an emulsion made with boiling water and cooled does not become green with the solution of iodine.

OFFICIAL PREPARATION.

Pilula Cambogiæ Co.

Therapeutics.—Drastic hydragogue purgative, used in dropsies.

Dose.—Powder, 1 to 5 grains; pill, 3 to 10 grains.

Adulteration.—Gamboge may contain starch and woody fibre. The former is detected by iodine, the latter by the microscope.

N.O. MALVACEÆ.

Botanical name.	Part used.	Habitat.
GOSSYPIUM BARBADENSE.	Hairs of Seed.	S. America.

GOSSYPIUM.

Cotton.

The hairs of the seed of *Gossypium barbadense,* and of other species of Gossypium, from which fatty matter and all foreign impurities have been removed.

Characters and Tests.—In white soft filaments, each consisting of an elongated tubular cell, and when examined under the microscope appearing as a flattened, twisted band, with slightly thickened, rounded edges; inodorous and tasteless. It should readily be wetted by water, to which it should not communicate either an alkaline or acid reaction. It is composed of almost pure *cellulose.* On ignition in air it burns, leaving less than one per cent. of ash.

Preparation for which cotton wool is used.—Pyroxylin.

PYROXYLIN. *Gun Cotton.*—Made by immersing cotton in a mixture of nitric and sulphuric acids for a short time, then washing the cotton in water, and drying carefully. By this treatment the cotton is converted into dinitro-cellulose, $C_6H_8(NO_2)_2O_5$.

COLLODIUM.—Collodion is made by dissolving gun-cotton in a mixture of ether and rectified spirit.

COLLODIUM FLEXILE.—Made by adding castor oil and canada balsam to collodion.

COLLODIUM VESICANS.—Made by dissolving gun-cotton in blistering liquid.

Uses.—Largely employed as a surgical dressing to wounds, burnt and other surfaces. An absorbent variety is sold deprived of its oil, and can be medicated as desired. Salicylic, iodoform, and carbolic wools are largely used as antiseptic dressings.

The collodions are applied to cuts, inflamed surfaces, and skin diseases; also to prevent the pitting from small-pox.

N.O. ERYTHROXYLACEÆ.

Botanical name.	Part used.	Habitat.
ERYTHROXYLON COCA.	Leaves.	Peru.

COCA.

Coca.

The dried leaves of *Erythroxylon Coca.*

Characters.—Shortly stalked, oval or lanceolate, of varying thickness, one to two inches or more in length, entire, usually blunt and emarginate, quite smooth; midrib prominent, with numerous faint freely anastomosing lateral veins, and on each side of the midrib a curved line extends from base to apex; green above, somewhat paler beneath. In commercial specimens the leaves are more or less broken, and frequently yellowish-green, yellowish-brown, or brown, and in rare cases the curved lines are indistinguishable. Odour faintly tea-like, especially when bruised; taste somewhat bitter and aromatic. Coca leaves contain an alkaloid called *cocaine*, which in contact with caustic alkalies is said to yield benzoic acid.

OFFICIAL PREPARATIONS.

Extractum Cocæ Liquidum. Cocainæ Hydrochloras.

COCAINÆ HYDROCHLORAS.—The hydrochlorate of an alkaloid obtained from the leaves of coca. It may be obtained by agitating with ether an aqueous solution of an acidulated alcoholic extract, made alkaline with carbonate of sodium; separating and evaporting the ethereal liquid, purifying the product by repeating the treatment with acidulated water, carbonate of sodium, and ether; decolorising; neutralising with hydrochloric acid, and recrystallising.

Characters and Tests.—In almost colourless acicular crystals or crystalline powder, readily soluble in water and alcohol. Its solution in water has a bitter taste; gives a yellow precipitate with chloride of gold; and a white precipitate with carbonate of ammonium, insoluble in excess of the reagent. Its solution produces on the tongue a sensation of numbness. The aqueous solution dilates the pupil of the eye. The author finds strong solutions are amphiteric.

OFFICIAL PREPARATION.

Lamellæ Cocainæ.

Therapeutics.—Stimulant and restorative, also a valuable local anodyne; injected under the skin, it destroys sensation in the surrounding parts, hence is useful in minor operations. When applied locally it anæsthetises the cornea and mucous membranes.

Dose.—Extract, ½ to 2 drachms; hydrochlorate of cocaine, ⅕ to 1 grain.

N.O. STERCULIACEÆ.

Botanical name.	Part used.	Habitat.
THEOBROMA CACAO.	Oil.	S. America.

OLEUM THEOBROMATIS.

Oil of Theobroma.

A solid fat, obtained by expression and heat from the seeds of *Theobroma Cacao.*

Characters.—Of the consistency of tallow; colour yellowish; odour resembling that of chocolate; taste bland and agreeable; fracture clean, presenting no appearance of foreign matter. It usually melts at temperatures between 86° and 95° F., and slowly becomes rancid on exposure to the air.

The special properties making this fat valuable are, its hardness, and low melting-point.

Contained in the following suppositories:—

Suppositoria Acidi Tannici.
" Hydrargyri.
" Iodoformi.
" Morphinæ.
" Plumbi Composita.

N.O. ZYGOPHYLLACEÆ.

Botanical name.	Part used.	Habitat.
GUAIACUM OFFICINALE.	Wood and resin.	W. Indies.
" SANCTUM.	"	"

GUAIACI LIGNUM

Guaiacum Wood.

The heart-wood of *Guaiacum officinale*, or of *Guaiacum sanctum*. For use in pharmacy the wood should be deprived of its sap-wood, and the heart-wood reduced to the form of chips, raspings, or shavings.

Characters and Tests.—The chips, raspings, or shavings, as seen in the pharmacies, are dark greenish-brown, heavier than water; their taste, when chewed for a short time, is acrid and somewhat aromatic; and their odour, when rubbed, and more especially when heated, agreeable and faintly aromatic. When touched with nitric acid, they assume a temporary bluish-green colour; and if moderately heated in a solution of perchloride of mercury, a bluish-green colour is also produced.

GUAIACI RESINA.

Guaiacum Resin.

Obtained from the stem of *Guaiacum officinale* or of *Guaiacum sanctum*, by natural exudation, by incision, or by heat. The ordinary kind is extracted either by boiling the chips with salt and water, and skimming off the resin as it rises; or by boring a hole in one extremity of a block of the wood, and heating the other end in a fire, when the melted resin is driven out at the bored end.

Characters and Test.—In roundish or somewhat oval tears, or more commonly in large masses containing fragments of bark, wood, and other impurities; brownish or greenish-brown externally, and, when the surface has been rubbed and exposed to air and light, covered with a green powder. It is brittle, breaking with a clean glassy fracture; thin splinters are transparent and greenish-brown; powder greyish, but by exposure becoming green. A solution in rectified spirit strikes a clear-blue colour when applied to the inner surface of a paring of raw potato. It is made up of three resins, called *Guaiaconic* and *Guaiaretic acids;* also *Guaiac Beta-resin.* It is the first of these acting on the gluten of the potato which turns it blue.

OFFICIAL PREPARATIONS.

Mistura Guaiaci.
Tinctura ,, Ammoniata.

Contained in Decoctum Sarzæ Co., and Pilula Hydrargyri Subchloridi Co.

Therapeutics.—Stimulant, diaphoretic, and alterative; given in gout and rheumatism.

Dose.—Resin in powder, 10 to 30 grains; mixture, 1 to 2 ounces; tincture, ½ to 1 drachm.

N.O. RUTACEÆ.

Botanical name.	Part used.	Habitat.
BAROSMA BETULINA.	Leaves.	Cape of Good Hope.
,, CRENULATA.	,,	,, ,,
,, SERRATIFOLIA.	,,	,, ,,
PILOCARPUS PENNATIFOLIUS.	,,	S. America.
GALIPEA CUSPARIA.	Bark.	Venezuela.
RUTA GRAVEOLENS.	Oil.	Indigenous.

BUCHU FOLIA.

Buchu Leaves.

The dried leaves of, 1. *Barosma betulina;* 2. *Barosma crenulata;* 3. *Barosma serratifolia.*

Characters.—Smooth, serrate, somewhat dentate, or crenate, and marked on the margins, and especially on their under surface, with oil-glands. Their colour is dull yellowish-green; odour strong, penetrating, and peculiar; taste aromatic, bitterish, and mint-like. 1. From ½ inch to

¾ inch long, cuneate or rhomboid-obovate, serrate-dentate, apex very blunt and usually recurved; texture more cartilaginous than in the other species. 2. From ¾ inch to about 1¼ inch long, thickish, oval-oblong or rhomboid-oval, somewhat blunt at the apex, narrowed at the base into a distinct petiole, finely serrate or crenate-serrate. 3. From 1 inch to 1½ inch long, linear-lanceolate, equally tapering to each end, actual apex truncate, sharply and closely serrate; texture thinner than in the other species. By distillation the leaves yield an essential oil, which on cooling partly solidifies; depositing *barosma camphor.*

OFFICIAL PREPARATIONS.

Infusum Buchu.
Tinctura ,,

Therapeutics.—Stimulant and diuretic, acting specially on the urinary organs.. Given in catarrh of the bladder.

Dose.—Infusion, 1 to 4 ounces; tincture, ½ to 2 drachms.

Adulterant.—The leaves of *Empleureum serrulatum.* They are very much like the leaves of *Barosma serratifolia*, but longer and narrower, terminating in an acute point, without an oil duct.

JABORANDI.

Jaborandi.

The dried leaflets of *Pilocarpus pennatifolius.*

Characters.—Leaflets very shortly stalked, usually 4 inches or more in length, oval-oblong or oblong-lanceolate, somewhat unequal at the base, obtuse and emarginate, slightly revolute and entire at the margins, coriaceous. Upper surface glabrous, except when young, dull green; under surface paler, often somewhat hairy, with a very prominent midrib, and seen to be marked irregularly all over with pellucid dots when held against the light. The active principle of this drug is a syrupy alkaloid called *pilocarpine*, which, in the process of extraction, is partly decomposed into a second alkaloid called *jaborine*.

OFFICIAL PREPARATIONS.

Extractum Jaborandi.	**Pilocarpinæ Nitras.**
Infusum Jaborandi.	**Tinctura Jaborandi.**

PILOCARPINÆ NITRAS.

Nitrate of Pilocarpine.

Made by shaking extract of jaborandi with ammonia and chloroform, separating the chloroform, evaporating, then neutralising the residue with nitric acid, and purifying by several crystallisations.

Characters and Tests.—A white crystalline powder or acicular crystals; soluble in eight or nine parts of water at common temperatures; slightly soluble in cold, freely soluble in hot rectified spirit. Strong sulphuric acid forms with it a yellowish solution which, on the addition of bichromate of potassium, gradually acquires an emerald-green colour. It leaves no ash when burned with free access of air. It causes contraction of the pupil of the eye.

Therapeutics.—Powerful diaphoretic and sialogogue; increases the action of the heart; causes contraction of the pupil. The author, under its influence, perspired most profusely for five hours, the sialogogue effect lasting about two hours.

Dose.—Extract, 2 to 10 grains; tincture, $\frac{1}{2}$ to 1 drachm; infusion, $\frac{1}{2}$ to 2 ounces; nitrate of pilocarpine, $\frac{1}{8}$ to $\frac{1}{3}$ grain.

CUSPARIÆ CORTEX.

Cusparia Bark.

The dried bark of *Galipea Cusparia;* also known as Angustura bark.

Characters and Test.—In flattish or curved pieces, or in quills, six inches or less in length; the bark itself commonly not more than one-sixth of an inch thick, sometimes obliquely cut on its inner edge. Coated externally with a yellowish-grey mottled corky layer, which may usually be scraped off by the nail, the exposed surface then presenting a dark-brown resinous appearance; inner surface light-brown; fracture short and resinous, and exhibiting, more especially when examined by a magnifying lens, numerous white points or lines. Taste bitter and somewhat aromatic. The fractured surface touched with nitric acid does not become of an arterial blood-red colour. This test is given to distinguish cusparia from nux vomica bark, the latter giving a red colour with nitric acid.

The chief principle of the bark is *cusparin*, a neutral body.

OFFICIAL PREPARATION.

Infusum Cuspariæ.

Therapeutics.—Aromatic stomachic tonic.

Dose.—Infusion, 1 to 2 ounces.

RUTÆ OLEUM.

Oil of Rue.

The essential oil made by distillation from the fresh herb of *Ruta graveolens.*

Characters.—Pale-yellow when recent, with a strong disagreeable odour and a bitter acrid taste.

Therapeutics.—Antispasmodic.

Dose.—1 to 4 minims.

N.O. AURANTIACEÆ.

Botanical name.	Parts used.	Habitat.
CITRUS VULGARIS.	Peel and Flowers.	S. Europe.
,, LIMONUM.	,, and Juice.	,,
ÆGLE MARMELOS.	Fruit.	Malabar.

AURANTII CORTEX.

Bitter-Orange Peel.

The dried outer part of the rind of *Citrus vulgaris.*

Characters.—In thin pieces, or in curled bands or strips, glandular and of a deep orange-red colour externally, and white within. It has an aromatic bitter taste, and pleasant aromatic odour.

Its chief constituents are an essential oil and a crystalline body called *hesperidin.*

OFFICIAL PREPARATIONS.

Infusum Aurantii.
,, ,, Compositum.
Tinctura Aurantii.
Syrupus Aurantii.

AURANTII FRUCTUS.

Bitter-Orange Fruit.

The ripe fruit of *Citrus vulgaris.*

Characters.—Globular except at the two ends, where it is somewhat compressed; about the size of the sweet orange, but the pericarp is rougher, darker in colour, being deep orange-red or red, the pulp very bitter and sour, and the rind more aromatic and very bitter.

OFFICIAL PREPARATIONS.

Tinctura Aurantii Recentis.
Vinum Aurantii.

AQUA AURANTII FLORIS.

Orange Flower Water.

The distilled water of the flowers of the Bitter Orange tree, *Citrus vulgaris,* and of the Sweet Orange tree, *Citrus Aurantium.*

The orange-flower water of commerce is usually three times the strength of that employed in former years.

Characters and Test.—Colourless or with a slight greenish, yellow tint; odour very fragrant; taste bitter. Not coloured by sulphuretted hydrogen.

Official Preparation.

Syrupus Aurantii Floris.

Therapeutics.—Aromatic, bitter tonic and stomachic; chiefly used as a flavouring agent.

Doses.—Infusions, ½ to 2 ounces; tincture, ½ to 2 drachms; syrups, ½ to 2 drachms; orange-flower water, ½ to 2 ounces.

LIMONIS CORTEX.

Lemon Peel.

The outer part of the rind or pericarp of the fresh fruit of the *Citrus Limonum.*

Characters.—Pale-yellow, and more or less rough on the outer surface from the presence of glands containing volatile oil. Odour strong, peculiar, and fragrant; taste warm, aromatic, and bitter.

Official Preparations.

Oleum Limonis.
Syrupus ,,
Tinctura ,,

LIMONIS SUCCUS.

Lemon Juice.

The freshly-expressed juice of the ripe fruit of *Citrus Limonum.*

Characters.—A slightly turbid yellowish liquid, with a sharp acid taste. Specific gravity, 1·035 to 1·045. Each fluid ounce contains from 36 to 46 grains of citric acid; also some mucilage and sugar.

Uses.—An ingredient of syrup of lemon.

LIMONIS OLEUM.

Oil of Lemon.

A volatile oil absorbed or distilled from fresh lemon peel.

Characters.—Pale-yellow, with fragrant odour and bitter aromatic taste. It is isomeric with turpentine, $C_{10}H_{16}$, and by age deposits a resin.

Contained in Linimentum Potassi Iodidi cum Sapone, and Spiritus Ammoniæ Aromaticus.

Therapeutics.—The tincture, oil, and syrup are used as flavouring agents. The juice is a valuable antiscorbutic, and given in rheumatism.

Doses.—Tincture and syrup, $\frac{1}{2}$ to 2 drachms; lemon juice, $\frac{1}{2}$ to 4 ounces.

BELÆ FRUCTUS.

Bael Fruit.

The dried, half-ripe fruit of *Ægle Marmelos*, Indian Bael or Bengal Quince.

Characters.—Fruit roundish, about the size of a large orange, with a hard, woody, nearly smooth rind; usually imported in dried, more or less twisted slices, or in fragments consisting of portions of the rind and adherent dried pulp and seeds. Rind about $\frac{1}{8}$ of an inch thick, hard, and covered with a nearly smooth pale-brown or greyish, firmly adherent epicarp; the pulp firm and brittle, and of an orange-brown or cherry-red colour externally, but when broken it is seen to be nearly colourless internally. It has no odour, and its taste in the dried state is simply mucilaginous and very slightly acid.

OFFICIAL PREPARATION.

Extractum Belæ Liquidum.

Therapeutics.—Astringent, largely employed, especially in India for treatment of diarrhœa and dysentery.

Dose.—Liquid extract, 1 to 4 drachms.

N.O. VITACÆ.

Botanical name.	Part used.	Habitat.
VITIS VINIFERA.	Fruit.	Spain.

UVÆ.

Raisins.

The ripe dried fruit of the *Vitis vinifera*, or grape vine.

Characters.—More or less shrivelled, compressed, smooth, free from sugary or saline incrustation; agreeably fragrant, and with a soft, very sweet pulp. They contain some grape sugar and acid tartrate of potassium.

Uses.—To give sweetness to Tinct. Cardamomi Co. and Tinct. Sennæ.

N.O. SIMARUBACEÆ.

Botanical name.	Part used.	Habitat.
PICRÆNA EXCELSA.	Wood.	Jamaica.

QUASSIÆ LIGNUM.

Quassia Wood.

The chips, shavings, or raspings of the wood of *Picræna excelsa.*

Characters and Test.—In billets or logs varying in length and size, but frequently as thick as a man's thigh, and covered by a dark-grey bark. The wood is dense, tough, porous, and of a pale yellowish-white colour. In the pharmacies it is commonly met with in the form of chips, shavings, or raspings of the wood only, which are inodorous, but have an intense and purely bitter taste. An infusion does not become black or bluish-black on the addition of a persalt of iron.

The active principle of this drug is a crystalline body called *quassin*, a strong poison.

OFFICIAL PREPARATIONS.

Extractum Quassiæ.
Infusum ,, (made with cold water).
Tinctura ,,

Therapeutics.—Bitter tonic and stomachic. The infusion is injected with a view to kill thread-worms. Quassia is compatible with iron salts.

Doses.—Extract, 2 to 5 grains; tincture, ½ to 2 drachms; infusion, ½ to 2 ounces.

N.O. AMYRIDACEÆ.

Botanical name.	Parts used.	Habitat.
BALSAMODENDRON MYRRHA.	Gum Resin.	Arabia.
CANARIUM COMMUNE?	Resin.	Manilla.

MYRRHA.

Myrrh.

A gum-resinous exudation obtained from the stem of *Balsamodendron Myrrha*.

Characters.—In roundish or irregular-formed tears or masses of agglutinated tears, varying very much in size; reddish-brown or reddish-yellow externally, dry, and more or less covered by a fine powder; brittle, fractured surface irregular, somewhat translucent, rich brown, oily, and frequently marked with opaque whitish spaces or striæ. Odour agreeable, aromatic; taste aromatic, bitter, and acrid. The gum constitutes about 40 per cent., the rest being resin and essential oil.

OFFICIAL PREPARATIONS.

Tinctura Myrrhæ,
Pilula Aloes et Myrrhæ,

contained in—

Decoctum Aloes Co.
Mixtura Ferri Co.
Pilula Asafœtidæ Co.
,, Rhei Co.

Therapeutics.—Stimulant and antispasmodic. The tincture, mixed with water, forms a useful wash for sore mouths and spongy gums.

Doses.—Tincture, ½ to 1 drachm; pil. aloes et myrrh, 5 to 15 grains.

Adulterants.—The gum resins of the following species of Balsamodendron have been found in myrrh: *B. pubescens*, *B. Mukul.* They are called Bdellium, or false myrrh, and found in roundish pieces of a dull dark-red colour.

ELEMI.

Manilla Elemi.

A concrete resinous exudation, the botanical source of which is undetermined, but is sometimes referred to *Canarium commune.*

Characters.—When fresh, soft, granular, resinous, and colourless; but by keeping it becomes harder, and of a pale-yellow tint. Odour strong and fragrant, somewhat resembling fennel and lemon. Moistened with rectified spirit, it breaks up into small particles, which, when examined by the microscope, are seen partly to consist of acicular crystals, consisting of *amyrin.* It also contains *Bryoidin*, essential oil, and resin.

OFFICIAL PREPARATION.

Unguentum Elemi.

Therapeutics.—Used as a stimulating application to ulcers.

N.O. ANACARDIACEÆ.

Botanical name.	Part used.	Habitat.
PISTACIA LENTISCUS.	Resin.	Scio.

MASTICHE.

Mastich.

A concrete resinous exudation, obtained by making incisions in the bark of the stem and large branches of *Pistacia Lentiscus.*

Characters.—In rounded, irregular, oblong, or pear-shaped tears, of a pale-yellow colour, and either opaque and dusty on their outer surface, or far more frequently having a glassy and transparent appearance; brittle, and breaking with a vitreous, conchoidal fracture. Odour agreeable, somewhat balsamic and terebinthinous; taste mild and resinous. Becoming plastic when chewed; entirely soluble in ether. Only 90 per cent. is soluble in alcohol.

Uses.—Employed by dentists as a temporary stopping for decayed teeth.

N.O. RHAMNACEÆ.

Botanical name.	Part used.	Habitat.
RHAMNUS FRANGULA.	Bark.	Indigenous.
,, PURSHIANUS.	,,	S. America.

RHAMNI FRANGULÆ CORTEX.

Frangula Bark.

The dried bark of *Rhamnus Frangula.* Collected from the young trunk and moderate-sized branches, and kept at least one year before being used.

Characters.—In small quills, the bark itself being about $\frac{1}{25}$ inch or somewhat more in thickness, and covered with a greyish-brown or blackish-brown corky layer marked with transverse whitish lenticels; inner surface smooth, brownish-yellow; fracture short and purplish externally, but somewhat fibrous and yellowish within. No marked odour; taste pleasant, sweetish, and slightly bitter.

OFFICIAL PREPARATIONS.

Extractum Rhamni Frangulæ.

,, ,, ,, **Liquidum.**

Therapeutics.—A laxative, given in constipation.

Dose.—Extract, 15 to 60 grains; liquid extract, 1 to 4 drachms.

RHAMNI PURSHIANI CORTEX

Sacred Bark.

The dried bark of *Rhamnus Purshianus.*

Characters.—In quills or incurved pieces of varying lengths and sizes, the bark itself being from about $\frac{1}{25}$ to $\frac{1}{8}$ inch thick, smooth or nearly so externally, covered with a greyish-white layer, which is usually easily removed, and frequently marked with spots or patches of adherent lichens. Beneath the surface it is violet-brown, reddish-brown, or brownish; and internally reddish-brown or yellowish-brown, and nearly smooth, although somewhat striated longitudinally. Fracture short, except internally, where it is slightly fibrous, more especially in the larger pieces. No marked odour; taste bitter. It is frequently imported in flattened packets, consisting of small pieces of the bark compressed into a more or less compact mass.

OFFICIAL PREPARATIONS.

Extractum Cascaræ Sagradæ.

,, ,, ,, **Liquidum.**

Therapeutics.—Laxative, given in constipation from dyspepsia and nervous diseases.

Dose.—Extract, 2 to 8 grains; liquid extract, $\frac{1}{2}$ to 2 drachms.

N.O. LEGUMINOSÆ.

Botanical names.	Part used.	Habitat.
CYTISUS SCOPARIUS.	Tops.	Indigenous.
ASTRAGALUS GUMMIFER.	Gum.	Asia Minor.
GLYCYRRHIZA GLABRA.	Root.	Indigenous.
INDIGOFERA TINCTORIA.	Colour.	India.
PHYSOSTIGMA VENENOSUM.	Seed.	W. Africa.
PTEROCARPUS MARSUPIUM.	Dried juice.	Malabar.
,, SANTALINUS.	Wood.	Ceylon.
MYROXYLON TOLUIFERA.	Balsam.	New Granada.

N.O. LEGUMINOSÆ *(continued).*

Botanical names.	Part used.	Habitat.
MYROXYLON PEREIRÆ.	Balsam.	San Salvador.
HÆMATOXYLON CAMPECHIANUM.	Wood.	Jamaica.
CASSIA ACUTIFOLIA.	Leaflets.	Egypt.
„ ANGUSTIFOLIA.	„	India.
„ FISTULA.	Fruit.	„
TAMARINDUS INDICA.	Pulp.	W. Indies.
COPAIFERA LANGSDORFFII.	Oleo-resin.	Amazon River.
ANDIRA ARAROBA.	Medullary matter (?).	Brazil.
ACACIA SENEGAL.	Gum.	Alexandria.

SCOPARII CACUMINA.

Broom Tops.

The fresh and dried tops of *Cytisus scoparius*. From indigenous plants.

Characters.—Branched, straight, with five wing-like angles, dark-green or yellowish-green, tough. Leaves, when present, small, sessile, and simple above, stalked and trifoliate below. Taste bitter and nauseous; odour, when fresh and bruised, peculiar, but this is nearly lost by drying.

The plant contains *scoparin*, an acid body; and *sparteine*, an alkaloid.

OFFICIAL PREPARATIONS.

Decoctum Scoparii.
Succus Scoparii.

Therapeutics.—Given as a diuretic in dropsies depending on heart disease.

Doses.—Decoction, 1 to 2 ounces; succus, 1 to 2 drachms.

TRAGACANTHA.

Tragacanth.

A gummy exudation, obtained by making incisions in the stem of *Astragalus gummifer*, and some other species of Astragalus.

Characters and Tests.—In white or somewhat yellowish flaky pieces of varying length and breadth; irregular oblong or roundish, more or less curved, marked on the surface by arched or concentric ridges, somewhat translucent, tough, but rendered more pulverisable at a temperature of 120° Fahr.; inodorous and almost tasteless. It is very sparingly soluble in cold water, but swells into a gelatinous mass, which is tinged violet or blue by tincture of iodine. After maceration in cold water the fluid portion is not precipitated by rectified spirit, showing the absence of gum acacia.

Tragacanth is a mixture of two substances: 1, *arabine*, soluble in water; 2, *bassorine*, swelling in water to a colloid mass.

OFFICIAL PREPARATIONS.

Glycerinum Tragacanthæ.
Mucilago ,,
Pulvis ,, Co.

Therapeutics.—Demulcent; also used to suspend heavy powders, like bismuth, in mixtures.

GLYCYRRHIZÆ RADIX.

Liquorice Root.

The root and subterranean stems or stolons, fresh and dried, of *Glycyrrhiza glabra.*

Characters.—When fresh in long cylindrical pieces of varying thickness, smooth and yellowish-brown or somewhat reddish externally, yellow and juicy internally, very flexible, easily cut, and consisting of a thick cortical portion surrounding a central woody axis, which in the case of the stem contains a small pith. Odour peculiar, earthy, and somewhat sickly; taste strong, peculiar, sweet. When dried it is either peeled or unpeeled. In the latter case it has essentially the same characters as the fresh root, except that it is somewhat darker; when peeled it has a yellow colour externally, and there is no acridity. The sweet taste is due to a compound called *glycyrrhizate of ammonium.*

OFFICIAL PREPARATION.

Pulvis Glycyrrhizæ Co.

Therapeutics.—A pleasant demulcent, given in coughs. The liquid extract has a remarkable power of covering the unpleasant taste of medicines.

Doses.—Extract, 10 to 30 grains; liquid extract, ½ to 1 drachm; compound powder, 20 to 60 grains.

INDIGO.

Indigo.

A blue pigment extracted from *Indigofera tinctoria.*

Uses.—A sulphate of indigo is official, and used as a test for free chlorine.

PHYSOSTIGMATIS FABÆ.

Calabar Bean.

The dried seed of *Physostigma venenosum.*

Characters.—From about 1 inch to 1¼ inch long, ¾ inch broad, and ½ inch or somewhat more in thickness; oblong and more or less reniform, and with a long broad blackish furrow running entirely along its convex side. Testa hard, brittle, roughish, deep chocolate-brown or brownish-red, and enclosing a closely-adhering nucleus which principally consists of two hard white brittle cotyledons separated from each other by a somewhat large cavity. Inodorous, and no marked taste beyond that of an ordinary bean. The poisonous principle of the seed is an alkaloid called *physostigmine* or *esserine.* Mr. E. M. Holmes has pointed out that the seeds of *Physostigma cylindrospermum* are sometimes sold for the true *P. venenosum.* To distinguish them, he says "the former are longer than the latter, nearly cylindrical, of a darker hue, and the hilum does not quite extend to the extremity of the bean."

OFFICIAL PREPARATION.

Extractum Physostigmatis Physostigmina.

PHYSOSTIGMINA.

Physostigmine.

An alkaloid made from the extract of Calabar bean by dissolving the extract in water, filtering, adding to the filtrate bicarbonate of sodium, and shaking with ether. The ether on separation and evaporation gives the alkaloid.

Characters and Tests.—In colourless or pinkish crystals, slightly soluble in water, but readily soluble in alcohol and in diluted acids. The aqueous solution has an alkaline reaction, with dilute solution of potash becomes red, and when evaporated leaves a bluish residue, the acidified solution of which is beautifully dichroic, being blue and red.

OFFICIAL PREPARATION.

Lamellæ Physostigminœ.

Therapeutics.—Calabar bean diminishes the heart's action, induces paralysis through its action on the spinal cord. Given in tetanus, delirium tremens, and epilepsy. Applied to the eye it powerfully contracts the pupil, perfectly antagonising atropine.

Dose.—Extract, $\frac{1}{16}$ to $\frac{1}{4}$ grain.

KINO.

Kino.

The juice obtained by incisions made in the trunk of *Pterocarpus Marsupium ;* inspissated without artificial heat.

Characters.—In small, angular, glistening, opaque, reddish-black brittle fragments, which in thin laminæ and at the edges are transparent and ruby-red; inodorous, very astringent, and when chewed sticking to the teeth and tinging the saliva blood-red. Almost entirely soluble in rectified spirit. It is chiefly composed of *kino-tannic acid* and *kino-red.*

OFFICIAL PREPARATIONS.

Pulvis Kino Co.
Tinctura Kino.

Therapeutics.—Powerful astringent, employed in diarrhœa.

Doses.—Pulv. Kino Co., 5 to 20 grains; tincture, ½ to 2 drachms.

PTEROCARPI LIGNUM.

Red Sandal, or Sanders Wood.

The sliced or rasped heart-wood of *Pterocarpus santalinus.*

Characters.—As imported it is in dense, heavy, irregular logs, varying in length and thickness, dark reddish-brown or blackish-brown externally and internally. It is usually found in the pharmacies in the form of raspings or small chips, which are deep reddish-brown in colour, very slightly astringent in taste, and when rubbed of a faint, peculiar odour. It contains a colouring matter called *santalic acid.*

Uses.—Colouring agent in the compound tincture of lavender.

BALSAMUM TOLUTANUM.

Balsam of Tolu.

A balsam which exudes from the trunk of *Myroxylon Toluifera* after incisions have been made in the bark.

Characters.—When first imported it is a soft and tenacious solid, but it becomes harder by keeping, and then, in cold weather, is brittle like resin. In thin films it is transparent, and of a yellowish-brown colour; and, when pressed between pieces of glass with the aid of heat, and then examined with a lens, it exhibits an abundance of crystals of cinnamic acid. Odour highly fragrant, especially when warmed; taste somewhat aromatic and slightly acid. It is soluble in rectified spirit, and the solution has an acid reaction. In addition to *cinnamic acid*, it contains *styracin* and *benzoic alcohol.*

OFFICIAL PREPARATIONS.

Syrupus Tolutanus.
Tinctura Tolutana.

Therapeutics.—Expectorant, given in bronchitis.

Dose.—Tincture, ½ to 1 drachm; syrup, ½ to 2 drachms.

BALSAMUM PERUVIANUM.

Balsam of Peru.

A balsam exuded from the trunk of *Myroxylon Pereiræ*, after the bark has been beaten, scorched, and removed.

Characters and Tests.—A liquid somewhat less viscid than treacle, appearing nearly black in bulk, but in thin layers deep orange-brown or reddish-brown and transparent. Its odour is agreeably balsamic, more especially when heated; and when swallowed it leaves a disagreeable burning sensation in the throat. It is insoluble in water, but soluble in chloroform or rectified spirit. Specific gravity between 1·137 and 1·150. Ten drops triturated with 6 grains of slaked lime produce a permanently soft mixture; and the mixture, on being warmed until all volatile matter is given off and until charring commences, gives no fatty odour. It should not diminish in volume when shaken with an equal bulk of water. These tests show absence of fixed oils and spirit. Its chief constituents are *cinnamein*, *styracin*, *cinnamic* and *benzoic acids*, and benzoic alcohol.

Therapeutics.—Given as an expectorant in bronchitis; applied locally as an antiseptic and stimulant to old sores and skin diseases.

Dose.—10 to 30 minims in the form of emulsion.

HÆMATOXYLI LIGNUM.

Logwood.

The sliced heart-wood of *Hæmatoxylon Campechianum.*

Characters.—The logs are hard, heavy, blackish-red externally, and internally reddish-brown. The chips as directed to be used have a reddish-brown colour, a slight peculiar agreeable odour, and a sweetish astringent taste. When chewed they colour the saliva a brilliant dark reddish-pink colour. They contain a colouring matter called *hæmatoxylin* easily changed to *hæmatine.*

OFFICIAL PREPARATIONS.

Decoctum Hæmatoxyli.
Extractum ,,

Therapeutics.—Valuable astringent, given in diarrhœa and dysentery.

Doses.—Extract, 10 to 30 grains; decoction, ½ to 2 ounces.

SENNA ALEXANDRINA.

Alexandrian Senna.

The dry leaflets of *Cassia acutifolia.*

Characters.—About ¾ inch to more than 1 inch long, lanceolate or oval-lanceolate, acute, unequal at the base, entire, thin, brittle, pale yellowish-green, evidently veined on the lower surface, and very finely pubescent or nearly smooth. Odour peculiar, faint, tea-like; taste mucilaginous, nauseous, and sickly.

SENNA INDICA.

Indian or Tinnevelly Senna.

The dried leaflets of *Cassia angustifolia.*

Characters.—From about 1 inch to 2 inches in length, lanceolate, acute, unequal-sided at the base, thin, entire, yellowish-green and smooth above, somewhat duller beneath, and glabrous or slightly pubescent. Odour and taste very similar to Alexandrian senna.

Both varieties of senna contain *cathartic acid*, which seems to be the active principle; there is also present chrysophanic, oxalic, and tartaric acids.

Official Preparations.

Confectio Sennæ.	**Syrupus Sennæ.**
Infusum ,,	**Tinctura ,,**
Mistura ,, Co.	

Contained in Pulvis Glycyrrhizæ Co.

Therapeutics.—Purgative, acting on the small intestines; usually given with sulphate of magnesium and some aromatics. The confection is a useful laxative for piles.

Doses.—Confection, 1 to 2 drachms; infusion or mixture, ½ to 2 ounces; syrup, ½ to 4 drachms; tincture, 1 to 4 drachms.

TAMARINDUS.

Tamarind.

The preserved pulp of the *Tamarindus indica.*

Characters and Test.—A reddish-brown, moist-sugary mass, enclosing strong branched fibres and brown shining seeds, each enclosed in a tough membranous coat. Taste agreeable, refreshing, subacid. A piece of bright iron, left in contact with the pulp for an hour, does not exhibit any deposit of copper. It contains acetic, tartaric, and citric acids, partly combined with potash.

Used in confection of senna.

Therapeutics.—Laxative and refrigerant.

Dose.—1 to 4 drachms.

CASSIA PULPÆ.

Cassia Pulp.

The pulp obtained from the recently imported pods of *Cassia Fistula.*

Characters.—The pods are from 1½ foot to 2 feet long, and nearly 1 inch in diameter, shortly stalked, pointed, blackish-brown, very hard, indehiscent, but the sutures marked by two smooth longitudinal bands; divided internally by thin transverse partitions into numerous cells, each containing a solitary smooth, flattish-oval, reddish-brown seed, more or less surrounded by pulp, and hence the pods should not rattle when shaken. The pulp is viscid, blackish-brown, sweet in taste, and somewhat sickly in odour. When obtained separately the pulp frequently contains the seeds and the partitions of dissepiments; these should be removed when it is used for pharmaceutical purposes.

Uses.—The pulp is employed as an ingredient of confection of senna, being a mild laxative.

COPAIBA.

Copaiva.

The oleo-resin obtained by cutting deeply or boring into the trunk of *Copaifera Langsdorffii*, and other species of Copaifera.

Characters and Tests.—A more or less viscid liquid; generally transparent and not fluorescent, but some varieties are opalescent and occasionally slightly fluorescent; light-yellow to pale golden-brown, having a peculiar aromatic odour, and a persistent acrid somewhat bitter taste. Its specific gravity varies from 0·940 to about 0·993. A small quantity heated until all volatile oil is removed yields a residue which when cold is hard and without green colour, and, generally, easily rubbed to powder; and the oil volatilised during the operation does not smell of turpentine. If there is any green colour to the residue it indicates the presence of copper. Almost entirely soluble in absolute alcohol, and in four times its bulk of petroleum spirit, the latter solution only yielding a filmy deposit on standing.

Distilled it gives a volatile oil and a residue of resin called *copaivic acid.* The latter unites with magnesia, lime, soda, or potash, to form copaivates of these bases.

OFFICIAL PREPARATION.

Oleum Copaibæ.

Obtained by distillation from Copaiva.

Therapeutics.—Stimulant to the mucous membranes, especially of the genito-urinary organs; useful in gonorrhœa, gleet, and cystitis; sometimes given in bronchitis. Copaiba is readily absorbed and easily detected by its odour, both in the breath and urine. The resin is a powerful diuretic.

Doses.—Copaiba, 10 to 60 minims; oil of copaiba, 5 to 20 minims; resin, 5 to 20 grains.

Adulterants.—Castor and other fixed oils have been found. They are detected by evaporating a portion of the sample, when the residue on cooling, if pure, is a hard resin; if containing fixed oils, it is more or less soft.

CHRYSAROBINUM.

Chrysarobin.

This substance, known also as Araroba or Goa powder, is said to be the medullary matter of the stem and branches of the *Andira araroba.*

Characters and Tests.—A brownish powder or granular particles, tasteless and inodorous. Very sparingly soluble in water, but almost entirely soluble in 150 parts of hot rectified spirit. Freely soluble in boiling benzol, from which it separates yellow crystals of *chrysophan*, soon changing to chrysophanic acid. On heating it melts and partially sublimes in yellow vapours, leaving a charred residue. It dissolves in sulphuric acid to form a yellow or orange-red solution, and in solution of caustic potash to form a yellow to reddish fluorescent solution, which becomes carmine by absorption of oxygen from the air.

OFFICIAL PREPARATION.

Unguentum Chrysarobini.

Therapeutics.—Purgative and emetic; chiefly used as ointment in skin diseases, as psoriasis and ringworm.

Dose.—$\frac{1}{6}$ to $\frac{1}{2}$ grain.

ACACIA GUMMI.

Gum Acacia.

A gummy exudation from the stem and branches of *Acacia Senegal* and other species of Acacia.

Characters and Tests.—In roundish, ovoid, or vermicular tears or masses of various sizes; or in angular fragments with glistening surfaces; colourless, or with a yellowish, brownish, or reddish tint. The tears either opaque from numerous minute fissures and very brittle, or more or less transparent and not readily broken; the fractured surfaces vitreous in appearance. Taste bland and mucilaginous; without odour; insoluble in alcohol, but entirely soluble in water, and forming a clear, mucilaginous solution. The aqueous solution forms, with subacetate of lead, an opaque white jelly. If an aqueous solution of iodine be added to the powder, or to a solution formed with boiling water and cooled, there is no appearance of a violet or blue colour. It consists mainly of *arabin*, or arabic acid, combined with lime, potash, and magnesia.

PREPARATIONS CONTAINING GUM ACACIA.

Mistura Cretæ.
,, Guaiaci.
Mucilago Acaciæ.
Pulvis Amygdalæ Compositus.
,, Tragacanthæ Compositus.
Trochisci, in all.

Therapeutics.—Used as a demulcent and emulsifying agent.

Dose.—*Ad libitum.*

Adulterants.—Inferior kinds are often sold, known as Suakim gums; they are distinguished from the true Turkey gum by their darker colour and mixed irregular form.

N.O. ROSACEÆ.

Botanical name.	Part used.	Habitat.
PRUNUS AMYGDALUS (DULCIS).	Seed.	Malaga.
,, ,, (AMARA).	,,	Mogadore.
,, DOMESTICA.	Fruit.	France.
,, LAUROCERASUS.	Leaves.	Indigenous.
HAGENIA ABYSSINICA.	Flowers.	Abyssinia.
ROSA GALLICA.	Petals.	Indigenous.
,, CENTIFOLIA.	,,	,,
,, CANINA.	Fruit.	,,

AMYGDALA DULCIS.

Sweet Almond.

The ripe seed of the sweet almond tree, *Prunus Amygdalus*, var. *dulcis*. Imported from Malaga, and known as the Jordan almond.

Characters.—About an inch or somewhat more in length, nearly oblong in form, more or less compressed, pointed at one end and rounded at the other, and covered by a scurfy cinnamon-brown coat. Triturated with water it forms a white emulsion of an agreeable taste, but without any marked odour.

AMYGDALA AMARA.

Bitter Almond.

The ripe seed of the bitter almond tree, *Prunus Amygdalus*, var. *amara*.

Characters.—Resembles the sweet almond in appearance, but is distinguished by being broader and shorter, by its very bitter taste, and by its aqueous emulsion having an odour like that of ratafia or of peach-blossoms.

Both varieties of the almond yield by expression a fixed oil (oil of almonds); they both contain a ferment called *emulsin*. In addition, the bitter variety contains an inodorous glucoside called *amygdalin*, which, in the presence of water and emulsin, yields *hydrocyanic acid, oil of bitter almonds*, and *glucose*. From this it is evident that the bitter almond alone contains no essential oil or hydrocyanic acid, but if water be added, they are at once produced.

Essential oil of almonds is the aldehyd of benzoic alcohol; hence it is called benzoic aldehyd, C_7H_6O. Exposed to the air, it takes up oxygen, forming benzoic acid, $HC_7H_5O_2$. The crude oil contains hydrocyanic acid, hence is a poison. The acid can be removed by distilling the oil with lime and sulphate of iron.

Official Preparations.

Oleum Amygdalæ.
Pulvis Amygdalæ Co.
Mistura Amygdalæ.

Therapeutics.—Nutrient and demulcent. The fixed oil is a purgative. Almond meal, made into cakes or bread, is recommended for the treatment of diabetes, as it contains no starch. Essential oil of almonds is an agreeable flavouring agent, especially for castor and cod liver oils.

Doses.—Compound powder, ½ to 2 drachms; mixture, ½ to 2 ounces; fixed oil, 1 to 4 drachms.

PRUNUM.

Prune.

The dried drupe of *Prunus domestica*.

Characters.—Somewhat ovoid or oblong, about 1¼ inch long, black, shrivelled; pulp brownish, without marked odour, but with a sweet and somewhat mucilaginous acidulous taste.

Uses.—A mild laxative; enters into confection of senna.

LAUROCERASI FOLIA.

Cherry-Laurel Leaves.

The fresh leaves of *Prunus Laurocerasus.*

Characters.—Thick, coriaceous, on strong short petioles, oblong or somewhat obovate, 5 to 7 inches long, tapering towards each end, recurved at the apex, distantly but sharply serrated, and slightly revolute at the margins, with a prominent midrib, on either side of which, towards the base, are one or two glandular depressions. Inodorous except on bruising, when they emit a ratafia-like odour. The reaction producing the odorous principle is said to be similar to that which takes place on adding water to bruised bitter almonds, essential oil of almonds and hydrocyanic acid being the products.

OFFICIAL PREPARATION.

Aqua Laurocerasi.

Therapeutics.—Sedative, similar to hydrocyanic acid. Contains 0·1 per cent. of HCN.

Dose.—$\frac{1}{2}$ to 2 fluid drachms of the water.

CUSSO.

Kousso.

The dried panicles (chiefly of the female flowers) of *Hagenia abyssinica.*

Characters.—In compressed clusters or more or less cylindrical rolls, usually 10 inches or more in length, or the panicles are broken up into small fragments; brownish or greenish-brown, or reddish in the case of the female flowers; odour herby, tea-like; taste bitter, acrid, and disagreeable. The separate panicles are much branched, zigzag, more or less covered with hairs and glands, and with a large sheathing bract at the base of every branch. Flowers numerous, small, shortly stalked, unisexual, with two roundish, membranous, veiny bracts at the base of each flower, which are brownish-yellow in the male, and tinged with red in the female flowers; calyx hairy externally, veiny, with ten segments in two alternating whorls. The active principle is *koussin*, a neutral resin.

OFFICIAL PREPARATION.

Infusum Cusso.

Therapeutics.—Anthelmintic. It has no purgative property. When given it should be followed by a purgative.

Dose.—Powder, ¼ to ½ ounce; infusion, 4 to 8 ounces

ROSÆ GALLICÆ PETALA.

Red-Rose Petals.

The fresh and dried unexpanded petals of *Rosa gallica*. From plants cultivated in Britain.

Characters.—Usually in little cone-like masses, or sometimes separate and more or less crumpled; fine purplish-red, velvety; odour fragrant, roseate, especially developed by drying; taste bitterish, feebly acid, and astringent.

OFFICIAL PREPARATIONS.

Confectio Rosæ Gallicæ.
Infusum Rosæ Acidum.
Syrupus Rosæ Gallicæ.

Therapeutics.—Astringent; given with opium to allay hæmorrhages. The confection is a pill excipient.

Doses.—Confection, ½ to 1 drachm; syrup, ½ to 2 drachms; infusion, ½ to 2 ounces.

ROSÆ CENTIFOLIÆ PETALA.

Cabbage-Rose Petals.

The fresh fully-expanded petals of *Rosa centifolia.* From plants cultivated in Britain.

Characters.—Large, thin, delicate, very fragrant, and with a sweetish, slightly astringent, bitterish taste. Both odour and taste are readily imparted to water. The odour of this rose is due to a volatile oil called *attar* or *otto of rose.* It is accompanied by an odourless solid *stearopten.*

OFFICIAL PREPARATION.

Aqua Rosæ.

Uses.—A vehicle for other medicines to render them agreeable. Otto of rose is used as a perfume; sometimes added to ointments.

ROSÆ CANINÆ FRUCTUS.

Fruit of the Dog-Rose, or Hips.

The ripe fruit of *Rosa canina* and other indigenous species.

Characters.—¾ inch or more in length; ovoid or somewhat oval; smooth, shining, scarlet, or red; inodorous; taste pleasant, sweetish, acidulous.

OFFICIAL PREPARATION.

Confectio Rosæ Caninæ.

Therapeutics.—Slight refrigerant; mostly used as a pill excipient.

Dose.—Confection, ½ to 1 drachm.

N.O. MYRTACEÆ.

Botanical name.	Part used.	Habitat.
MELALEUCA MINOR.	Volatile oil.	Singapore.
EUGENIA CARYOPHYLLATA.	Flower buds.	Penang.
PIMENTA OFFICINALIS.	Fruits.	Jamaica.
EUCALYPTUS GLOBULUS.	Oil.	Australia.

OLEUM CAJUPUTI.

Oil of Cajuput.

The oil distilled from the leaves of *Melaleuca minor.*

Characters.—A transparent, limpid, very volatile, pale bluish-green liquid, with a strong, penetrating, agreeable, camphoraceous odour, and a warm, bitterish, aromatic, camphoraceous taste, succeeded by a sensation of coldness in the mouth. The oil consists mainly of *hydrate of cajuputen.*

OFFICIAL PREPARATION.

Spiritus Cajuputi.

Contained in Linimentum Crotonis.

Therapeutics.—Stimulant and antispasmodic; applied externally as a rubefacient.

Doses.—Oil, 1 to 5 minims; spirit, ½ to 1 drachm.

CARYOPHYLLUM.

Clove.

The dried flower-bud of *Eugenia caryophyllata.*

Characters.—Over ½ inch long, and consisting of a dark-brown, wrinkled, sub-cylindrical, and somewhat angular calyx tube, which tapers below, and is surmounted by four teeth, between which the paler-coloured petals, enclosing the numerous stamens and style, are rolled up in the form of a ball. Odour strong, fragrant, and spicy; taste very pungent and aromatic. It emits oil when indented with the nail. The clove contains, in addition to 16 per cent. essential oil, *caryophyllin* and *salicylic acid.*

OLEUM CARYOPHYLLI.

Oil of Cloves.

The oil distilled in Britain from cloves.

Characters.—Colourless or pale-yellow when recent, but gradually becoming reddish-brown, having in a high degree the odour and taste of cloves. Sinks in water.

OFFICIAL PREPARATIONS OF CLOVES.

Infusum Caryophylli.
Oleum ,,

Therapeutics.—Stimulant and carminative. The oil is used to relieve toothache.

Dose.—Oil, 1 to 5 minims; infusion, ½ to 2 ounces.

PIMENTA.

Pimento.

The dried, unripe, full-grown fruit of *Pimenta officinalis.* Also known as allspice, or Jamaica pepper.

Characters.—Roundish, ⅕ inch or more in diameter, and crowned with the remains of the calyx in the form commonly of a raised scar-like ring; pericarp roughish from the presence of oil-glands, brittle, dark-brown, two-celled, each cell containing a brownish-black somewhat compressed reniform seed. Odour and taste warm, aromatic, and peculiar, but resembling cloves.

OFFICIAL PREPARATIONS.

Aqua Pimentæ.
Oleum ,,

OLEUM PIMENTÆ.

Oil of Pimento.

The oil distilled in Britain from pimento.

Characters.—Colourless, or slightly yellowish-red when recent, but becoming brown by age, having the odour and taste of pimento. Sinks in water.

Therapeutics.—Similar to cloves.

Dose.—Oil, 1 to 5 minims; water, ½ to 2 ounces.

OLEUM EUCALYPTI.

Oil of Eucalyptus.

The oil distilled from the fresh leaves of *Eucalyptus Globulus*, *Eucalyptus amygdalina*, *E. dumosa*, and other species of eucalyptus.

Characters and Tests.—Colourless, or pale straw-coloured, becoming darker and thicker by exposure. It has an aromatic odour, and a spicy and pungent flavour, leaving a sensation of coldness in the mouth. It is usually faintly acid to litmus paper. Specific gravity about 0·885. Soluble in about an equal weight of alcohol.

Official Preparation.

Unguentum Eucalypti.

Therapeutics.—Used locally as an antiseptic, in the form of ointment, spray, or dressings.

N.O. GRANATEÆ.

Botanical name.	Part used.	Habitat.
Punica Granatum.	Root-Bark.	S. Europe.

GRANATI RADICIS CORTEX.

Pomegranate Root-Bark.

The dried bark of the root of *Punica Granatum.*

Characters and Test.—In small quills or fragments, varying from 2 to 4 inches in length; outer surface yellowish-grey, wrinkled or cracked with faint longitudinal striæ, or more or less furrowed with corky bands; inner surface smooth or nearly so, yellow; fracture short; no odour; taste astringent and very feebly bitter.

This bark contains an alkaloid, called *pelletierene*, and *punico-tannic* and gallic acids.

Official Preparation.

Decoctum Granati Radicis.

Therapeutics.—Anthelmintic.

Dose.—Decoction, 1 to 3 ounces.

N.O. CUCURBITACEÆ.

Botanical name.	Part used.	Habitat.
Citrullus Colocynthis.	Fruit Pulp.	S. Europe.
Ecballium Elaterium.	Fruit.	”

COLOCYNTHIDIS PULPA.

Colocynth Pulp.

The dried, peeled fruit, freed from seeds, of *Citrullus Colocynthis*.

Characters and Test.—As imported, it is usually in more or less broken balls, which are whitish, about 2 inches or less in diameter, roundish, very light, spongy, tough, and consisting of the pulp in which the seeds are imbedded. The broken-up pulp, freed from seeds, is the condition in which it is usually supplied to pharmacists, and in which state only is it official. It has an intensely bitter taste. The powder is not coloured blue by iodine, and does not yield oil when treated with ether and the separated ether evaporated. This test is given to show that the seeds, which contain oil, have not been ground with the pulp, also that starch is absent.

The bitter principle of the pulp is *colocynthin*, a glucoside.

OFFICIAL PREPARATIONS.

Extractum Colocynthidis Co.
Pilula ,, ,,
,, ,, et Hyoscyami.

Therapeutics.—Powerful purgative, producing watery evacuations. Given alone it gripes, so that it is usually combined with other drugs; employed in constipation and dropsy.

Doses.—Of either pill or compound extract, 5 to 10 grains.

ECBALLII FRUCTUS.

Squirting Cucumber Fruits.

The fruit, very nearly ripe, of *Ecballium Elaterium*. From plants cultivated in Britain. Its active principle is *elaterin*.

OFFICIAL PREPARATION.

Elaterium.

ELATERIUM.

Elaterium.

A sediment from the juice of the squirting cucumber fruit, made thus :—

Cut the fruit lengthwise, and lightly press out the juice. Strain it through a hair-sieve, and set it aside to deposit. Carefully pour off the supernatant liquid ; pour the sediment on a linen filter ; and dry it on porous tiles in a warm place. The decanted fluid may deposit a second portion of sediment, which can be dried in the same way.

Characters and Tests.—In light, friable, flat, or slightly curved, opaque cakes, about $\frac{1}{10}$th inch thick ; pale green, greyish-green, or yellowish-grey, according to age ; fracture finely granular ; odour faint, tea-like ; taste bitter and acrid. Does not effervesce with acids, showing absence of carbonates ; boiled with water and the cooled mixture treated with iodine ; affords little or no blue colour, shows absence of starch ; yields half its weight to boiling rectified spirit. It should contain 20 to 25 per cent. *elaterin.*

OFFICIAL PREPARATION.

Elaterinum.

ELATERINUM.

Elaterin.

The active principle of elaterium. It may be obtained by exhausting elaterium with chloroform, adding ether to the chloroformic solution, collecting the precipitate, washing the latter with ether, and purifying by recrystallisation from chloroform.

Characters and Tests.—A chemically neutral substance. In small colourless crystals ; insoluble in water, sparingly soluble in rectified spirit. It has a bitter taste. Heated with access of air, it first melts and then burns, leaving no residue. With melted carbolic acid it yields a solution which, on the addition of sulphuric acid, acquires a crimson colour, rapidly changing to scarlet. It is not precipitated from solution by tannic acid, nor by the salts of mercury or of platinum. These tests show the absence of alkaloids and glucosides.

OFFICIAL PREPARATION.

Pulvis Elaterini Co.

Therapeutics.—Powerful hydragogue purgative; used in dropsical affections due to heart disease.

Doses.—Elaterium, $\frac{1}{8}$ to $\frac{1}{2}$ grain; elaterin, $\frac{1}{40}$ to $\frac{1}{10}$ grain; compound powder, $\frac{1}{2}$ to 5 grains.

N.O. UMBELLIFERÆ.

Botanical name.	Part used.	Habitat.
CONIUM MACULATUM.	Fruit and Herb.	Indigenous.
CARUM CARUI.	Fruits.	Germany.
„ AJOWAN.	Stearopten.	India.
FŒNICULUM CAPILLACEUM.	Fruits.	S. Europe.
PIMPINELLA ANISUM.	„	„
PEUCEDANUM GRAVEOLENS.	„	„
CORIANDRUM SATIVUM.	„	„
FERULA SUMBUL.	Roots.	Russia.
„ NARTHEX.	Gum Resin.	Punjaub.
„ GALBANIFLUA.	„	India.
DOREMA AMMONIACUM.	„	Punjaub.

CONII FOLIA.

Hemlock Leaves.

The fresh leaves and young branches of *Conium maculatum,* gathered from wild British plants when the fruit begins to form.

Characters and Test.—More or less divided in a pinnate manner, the lower leaves decompound and sometimes 2 feet in length, glabrous, and arising from a smooth stem, which is marked with dark-purple spots. The leaves have clasping petioles of varying lengths, those of the lower leaves being hollow. Odour strong and very disagreeable, more especially when rubbed with solution of potash.

CONII FRUCTUS.

Hemlock Fruit.

The fruit of *Conium maculatum*, gathered when fully developed, but while still green, and carefully dried.

Characters and Test.—About $\frac{1}{8}$ inch long, broadly ovoid, somewhat compressed laterally, and crowned by the depressed stylopod, dull greenish-grey. As met with in commerce, it consists usually of the separated mericarps, each of which presents five prominent, more or less crenated ridges, with the furrows smooth, and without evident vittæ.

All parts of conium plant contain a volatile alkaloid, *coniene*, which is easily set free by rubbing the plant with caustic potash or soda. The odour of coniene is often described as mouselike, its vapour is alkaline, forming a dense white fume in contact with the vapour of hydrochloric acid.

OFFICIAL PREPARATIONS.

From the fruit	**Tinctura Conii.**
From the herb.	**Extractum Conii.** **Succus ,,**
From the extract	**Pilula Conii Co.**
From the succus	**Cataplasma Conii.** **Vapor ,,**

Therapeutics.—Sedative and antispasmodic; given in bronchitis, phthisis, chorea, and nervous diseases.

Doses.—Tincture and juice, ½ to 2 drachms; extract or pill, 3 to 10 grains.

Adulteration or Substitution.—Conium leaves have been found mixed with those of *Æthusia Cynapium*, or Fools Parsley, which is known by its primary umbel having no involucre. Also the leaves of *Cherophyllum Anthriscus*, known by their hairy nature.

CARUI FRUCTUS.

Caraway Fruit.

The dried fruit of *Carum Carui.*

Characters.—The fruit is usually separated into its two mericarps, which vary from about $\frac{1}{6}$ to $\frac{1}{4}$ inch long; they are slightly curved, somewhat tapering at each end, brown, with five ridges, and in each of the intervening spaces there is a large and conspicuous vitta. Odour agreeably aromatic, and due to an essential oil.

OLEUM CARUI.

Oil of Caraway.

The oil distilled in Britain from caraway fruit.

Characters.—Colourless or pale-yellow when recent, but gradually becoming darker, with the odour of the fruit, and a spicy somewhat acrid taste.

OFFICIAL PREPARATION.

Aqua Carui.

Therapeutics.—Aromatic stomachic, and carminative.

Dose.—Oil, 1 to 3 minims; water, ½ to 2 ounces.

THYMOL.

Thymol.

A stearopten obtained from the volatile oil of *Carum Ajowan.* Likewise from oils yielded by plants of the order *Labiateæ.*

To separate the thymol, the oil is shaken with soda, and the soda solution withdrawn and treated with hydrochloric acid; or a distilled fraction of the oil may be submitted to a low temperature, when the thymol separates in crystals.

Characters and Tests.—Large, oblique, prismatic crystals, having the odour of thyme and a pungent aromatic flavour. They sink in cold water, but on heating the mixture to a temperature of 110° to 125° F., they melt and rise to the surface, and often maintain the liquid state long after the water has cooled, but on touching the liquid with a crystal of thymol it becomes solid. Slightly soluble in cold water, freely soluble in alcohol, ether, and solutions of alkalies. The crystals volatilise completely at the temperature of a water-bath. A solution of thymol in half its bulk of glacial acetic acid, warmed by an equal volume of sulphuric acid, assumes a reddish-violet colour.

Therapeutics.—Chiefly used as an antiseptic.

FŒNICULI FRUCTUS.

Fennel Fruit.

The dried fruit of cultivated plants of *Fœniculum capillaceum.*

Characters.—From $\frac{1}{5}$ to about $\frac{2}{5}$ inch long, oblong or ovoid-oblong, more or less curved, capped by a conspicuous stylopod and two styles, smooth, greenish-brown, or brown; odour aromatic; taste aromatic, sweet, and agreeable. The fruit is readily separated into its two mericarps, each of which has five prominent ridges, of which the lateral are the broadest, and four vittæ in the grooves, and two on the commissure. Contains an essential oil, having the same composition as oil of aniseed.

OFFICIAL PREPARATION.

Aqua Fœniculi.

Therapeutics.—Aromatic stomachic, and carminative.

Dose.—Fennel water, ½ to 2 drachms.

ANISI FRUCTUS.

Anise Fruit.

The dried fruit of *Pimpinella Anisum.*

Characters.—Anise fruits, with the exception of the Russian variety, which is shorter, average about ⅕ inch in length; they are ovoid-oblong in form, of a greyish-brown colour, and their whole surface is covered with short hairs. Their two constituent mericarps are united and attached to a common stalk, and each mericarp is traversed by five pale, slender, entire ridges, and its transverse section exhibits about fifteen vittæ. They have an agreeable aromatic odour and a sweetish spicy taste, due to the essential oil.

OLEUM ANISI.

Oil of Aniseed.

The volatile oil distilled from the above fruit.

Characters.—Colourless, or very pale-yellow, with the odour of the fruit and an aromatic sweetish taste. The ordinary oil of anise congeals at temperatures between 50° and 60° F., and may remain solid at 62° or 63° F.; oil of star-anise only becomes solid at a few degrees above the freezing point of water. Consists mainly of *anethol* or *anise camphor.*

OFFICIAL PREPARATIONS.

From the fruits:—

Oleum Anisi.
Aqua ,,

From the oil:—

Essentia Anisi.

Therapeutics.—Aromatic stomachic, and carminative.

Dose.—Oil, 1 to 3 minims; essence, 3 to 5 minims; water, $\frac{1}{2}$ to 2 ounces.

ANETHI FRUCTUS.

Dill Fruit.

The dried fruit of *Peucedanum graveolens.*

Characters.—Broadly oval, about $\frac{1}{6}$ inch long, flat, and surrounded by a broad, membranous border. It has a brown colour. The half-fruits or mericarps are usually distinct in the fruits of commerce. Odour and taste agreeably aromatic.

OLEUM ANETHI.

Oil of Dill.

The oil distilled in Britain from dill fruit.

Characters.—Colour pale-yellow, odour pungent, taste hot and sweetish.

OFFICIAL PREPARATIONS FROM FRUIT.

Aqua Anethi.
Oleum ,,

Therapeutics.—Aromatic stomachic, and carminative.

Dose.—Oil, 1 to 3 minims; water, $\frac{1}{2}$ to 2 ounces.

CORIANDRI FRUCTUS.

Coriander Fruit.

The dried ripe fruit of *Coriandrum sativum.*

Characters.—Nearly globular, and consisting of two closely united hemispherical mericarps, crowned by the calyx teeth and stylopod, about $\frac{1}{5}$ inch in diameter, brownish-yellow, hard, faintly ribbed with both primary and secondary ridges, the two mericarps enclosing a lenticular cavity, and each furnished on its commissural surface with two brown vittæ. It has an agreeable mild aromatic taste, and, when bruised, a pleasant odour. The fruits contain a fixed and a volatile oil.

OLEUM CORIANDRI.

Oil of Coriander.

The oil distilled in Britain from coriander fruit.

Characters.—Pale-yellow or colourless, having the odour of the fruit and a mild aromatic taste.

Uses.—The fruit is a carminative, and enters into several official preparations.

SUMBUL RADIX.

Sumbul Root.

The dried transverse sections of the root of *Ferula Sumbul.*

Characters.—Varying much in size, but usually from about 1 inch to 3 inches in diameter, and from $\frac{3}{4}$ inch to more than 1 inch in thickness. The pieces are covered on the outer surface by a dusky-brown papery transversely wrinkled bark, and are sometimes beset with short bristly fibres. Internally they are spongy, coarsely fibrous, dry, farinaceous, and dirty yellowish-brown, mottled with whitish patches and spots of exuded resin. Odour strong, musk-like; taste bitter, aromatic. The chief constituents of the root are a resin and a volatile oil.

OFFICIAL PREPARATION.

Tinctura Sumbul.

Therapeutics.—Nervine stimulant and antispasmodic; given in nervous affections.

Dose.—Tincture, 10 to 60 minims.

ASAFŒTIDA.

Asafœtida.

A gum-resin obtained by incision from the living root of *Ferula Narthex*, and of *Ferula Scorodosma*, and probably other species.

Characters and Tests.—Rarely in tears; usually in irregular masses, varying in consistence and size, and composed of tears agglutinated together by darker-coloured and softer material. When broken or cut, the exposed surface has an amygdaloid appearance, the fractured tears being opaque and milk-white at first, but changing gradually to purplish-pink or reddish-pink, and finally to dull yellowish-brown. Taste bitter, acrid, and alliaceous; odour strong, alliaceous, and persistent. When triturated with water it forms a white emulsion. The freshly fractured surface of a tear when touched with nitric acid assumes for a short time a fine green colour. It should yield not more than 10 per cent. of ash. 50 to 60 per cent. should be soluble in rectified spirit.

Asafœtida contains gum, resin, and volatile oil, also acetic, formic, and valerianic acids; the volatile oil is a sulphur compound of allyl. The resin of asafœtida contains ferulic acid.

Official Preparations.

Enema Asafœtidæ.
Pilula ,, Co.
Spiritus Ammoniæ Fœtidus.
Tinctura Asafœtidæ.
Pilula Aloes et Asafœtidæ.

Therapeutics.—Stimulant, and powerful antispasmodic; given in hysterical and convulsive affections and nervous diseases. On account of its repulsive odour it is best given in the pill form.

Doses.—Of the gum resin, 5 to 15 grains; pill, 5 to 10 grains; spirit or tincture, ½ to 1 drachm; pill, with aloes, 5 to 10 grains.

GALBANUM.

Galbanum.

A gum-resin, obtained from *Ferula galbaniflua*, *Ferula rubricaulis*, and probably other species.

Characters.—In tears, or in masses of agglutinated tears. The tears are roundish or irregular in form, and vary in size from that of a lentil to a hazel nut, although rarely exceeding that of a pea; yellowish-brown, orange-brown, or yellowish-green; more or less translucent, usually rough and dirty on the surface, hard and brittle in cold weather, but softening in the summer, and by the heat of the hand becoming ductile and sticky. The masses, which commonly contain pieces of root, stem, and other impurities, are usually hard, compact, irregular in form, yellowish-brown, dark brownish-yellow, or rarely greenish. The odour is peculiar, aromatic, and not disagreeable; taste bitter, unpleasant, and somewhat alliaceous. Galbanum contains a volatile oil, resin, and gum, also a crystalline substance called *umbeliferone*, which gives a fine blue fluorescence with alkalies.

Official Preparation.

Emplastrum Galbani.

Therapeutics.—Antispasmodic.

AMMONIACUM.

Ammoniacum.

A gum-resinous exudation from the stem (after being punctured by beetles) of *Dorema Ammoniacum.*

Characters and Tests.—In roundish tears, varying in size from that of a coriander fruit to a cherry, or in nodular masses of agglutinated tears of various sizes and forms; pale yellowish-brown externally when recent, but darkening by keeping to cinnamon brown, milky white, and opaque internally; hard and brittle when cold, and breaking with a dull, waxy fracture, but readily softening with heat. It has a faint, peculiar, non-alliaceous odour, and a bitter acrid taste. When triturated with water it forms a nearly white emulsion. It is coloured yellow by caustic potash, and a solution of chlorinated soda gives it a bright orange hue. Contains volatile oil, gum, and resin, but no sulphur.

OFFICIAL PREPARATIONS.

Mistura Ammoniaci.
Emplastrum ,, cum Hydrargyro.

Therapeutics.—Stimulating expectorant, given in some cases of chronic bronchitis; the plaster with mercury is used to diminish chronically enlarged joints.

Doses.—Of the gum resin, 10 to 30 grains; of the mixture, ½ to 2 ounces.

N.O. CAPRIFOLIACEÆ.

Botanical name.	Part used.	Habitat.
SAMBUCUS NIGRA.	Flowers.	Indigenous.

The fresh flowers of *Sambucus nigra.* From indigenous plants.

Characters.—In corymbose cymes, from 5 to 7 inches across. Flowers small; calyx superior, 5-toothed; corolla flat, rotate, 5-sected, creamy-white, with 5 stamens inserted in the tube. Odour fragrant, but somewhat sickly; taste bitterish.

OFFICIAL PREPARATION.

Aqua Sambuci.

Therapeutics—Used as a flavouring agent, or as a cooling local application.

Dose.—Of water, ½ to 2 ounces.

N.O. CINCHONACEÆ.

Botanical name.	Part used.	Habitat.
CINCHONA SUCCIRUBRA.	Bark.	India.
,, CALISAYA.	,,	Bolivia.
,, OFFICINALIS.	,,	Ecuador.
CEPHAELIS IPECACUANHA.	Root.	Brazils.
UNCARIA GAMBIER.	Extract.	Singapore.

CINCHONÆ RUBRÆ CORTEX.

Red Cinchona Bark.

The dried bark of the stem and branches of *Cinchona succirubra.*

Characters.—In quills or more or less incurved pieces, coated with the outer bark, and varying in length from a few inches to a foot or more—the bark being $\frac{1}{10}$ to $\frac{1}{4}$ inch thick, or rarely more; outer surface more or less rough from longitudinal furrows and ridges, or transverse cracks, annular fissures, and warts, and brownish or reddish-brown in colour; inner surface brick-red or deep reddish-brown, irregularly and coarsely striated; fracture nearly close in the smaller quills, but finely fibrous in the larger ones.

Test.—This bark, for official purposes, should yield between 5 and 6 per cent. of total alkaloids, half of which should consist of quinine and cinchonidine; see next page.

All official preparations are made from this bark.

CINCHONÆ FLAVÆ CORTEX.

Yellow Cinchona Bark.

The bark of *Cinchona Calisaya.*

Characters.—In large quills one or two feet long and $\frac{3}{4}$ to $1\frac{1}{2}$ inch in diameter, outer surface having numerous shallow longitudinal cracks, and a few deeper transverse ones, the general appearance being greyish-white, with brown streaks. It breaks transversely with a fibrous fracture.

CINCHONÆ PALLIDÆ CORTEX.

Pale Cinchona Bark.

The bark of *Cinchona Officinalis.*

Characters.—In quills from a few inches to a foot long, $\frac{1}{8}$ to $\frac{3}{4}$ inch in diameter; the pieces have a whitish or pale brown or silvery external surface, of a spongy character. The inner surface of the bark is closely striated; it breaks easily with a fracture, which shows long fibres on the inner side.

CHEMICAL COMPOSITION OF CINCHONA BARKS.

Cinchona barks owe their great value to the presence of numerous alkaloids, the chief of which are the following:—*quinine*, *quinidine*, *quinoidine*, *quinicine*, *cinchonine*, *cinchonidine.* These are in combination with the following acids:—*kinic*, *kinovic*, and *cincho-tannic;* a colouring matter is also present, called cinchona-red.

Estimation of Quinine and Cinchonidine.—Mix 200 grains of red cinchona bark in No. 60 powder into a paste with 60 grains of slaked lime and a little water; allow them to macerate an hour or two, then exhaust thoroughly with benzolated amylic alcohol, 1 volume benzol, 3 amylic alcohol. The solution obtained is shaken with hydrochloric acid, until all the alkaloids have separated in union with the acid, to form a substratum. The acid hydrochlorates are now withdrawn, made neutral with ammonia, and concentrated to 3 drachms. Fifteen grains of tartarated soda dissolved in 30 grains of water is now added to the solution, when, in about an hour, the quinine and cinchonidine will separate as insoluble tartrates; these, washed and dried, will contain, in each 10 grains, 8 grains of quinine and cinchonidine. On dividing the result by two, the percentage is obtained.

Estimation of Total Alkaloids.—The mother liquor of the previous process is treated with ammonia in slight excess, and the precipitate washed and dried. The weight of this precipitate, divided by two and added to the previous percentage, gives the total alkaloids.

Official Salts of Cinchona Alkaloids.

Quininæ Sulphas.
,, Hydrochloras.
Cinchonidinæ Sulphas.
Cinchoninæ ,,

QUININÆ SULPHAS.

Sulphate of Quinine.

The sulphate of an alkaloid prepared from various kinds of Cinchona and Remijia bark by extraction with spirit after the addition of lime, or by the action of alkali on an acidulated aqueous infusion, with subsequent neutralisation of the precipitated alkaloid by sulphuric acid and purification of the resulting salt.

Characters and Tests.—Sulphate of quinine forms silky crystals, sparingly soluble in water (1 in 700 to 800), freely soluble in water on the addition of dilute acids. One grain of the sulphate requires 1 minim of dilute sulphuric acid for its solution, and is thus converted into a very soluble acid sulphate. Solutions of quinine are known by their fluorescence, and by their giving an emerald-green colour with chlorine water and ammonia; also by their giving a white precipitate with ammonia, quite soluble in ether.

Cinchonidine, Cinchonine, Quinidine, and Cupreine may occur as impurities in quinine. For their detection the

Pharmacopœia provides the following tests; the processes being mainly those of Dr. B. H. Paul.

Test for Cinchonidine and Cinchonine.—Heat 100 grains of the sulphate of quinine in 5 or 6 ounces of boiling water, with 3 or 4 drops of diluted sulphuric acid. Set the solution aside until cool. Separate by filtration the purified sulphate of quinine which has crystallised out. To the filtrate, which should nearly fill a bottle or flask, add ether, shaking occasionally, until a distinct layer of ether remains undissolved. Add ammonia in very slight excess, and shake thoroughly, so that the quinine at first precipitated shall be redissolved. Set aside for some hours or during a night. Remove the supernatant clear ethereal fluid, which should occupy the neck of the vessel, by a pipette. Wash the residual aqueous fluid and any separated crystals of alkaloid with a very little more ether once or twice. Collect the separated alkaloid on a tared filter, wash it with a little ether, dry at 212° F., and weigh. Four parts of such alkaloid correspond to five parts of crystallised sulphate of cinchonidine or of sulphate of cinchonine.

Test for Quinidine.—Recrystallise 50 grains of the original sulphate of quinine as described in the previous paragraph. To the filtrate add solution of iodide of potassium and a little spirit of wine, to prevent the precipitation of amorphous hydriodates. Collect any separated hydriodate of quinidine, wash with a little water, dry, and weigh. The weight represents about an equal weight of crystallised sulphate of quinidine.

Test for Cupreine.—Shake the recrystallised sulphate of quinine, obtained in testing the original sulphate of quinine for cinchonidine and cinchonine, with 1 fluid ounce of ether and a $\frac{1}{4}$ ounce of solution of ammonia, and to this ethereal solution, separated, add the ethereal fluid and washings also obtained in testing the original sulphate for the two alkaloids just mentioned. Shake this ethereal liquor with a ¼ fluid ounce of a 10 per cent. solution of caustic soda, adding water if any solid matter separates. Remove the ethereal solution. Wash the aqueous solution with more ether, and remove the ethereal washings. Add diluted sulphuric acid to the aqueous fluid heated to boiling until the soda is exactly neutralised. When cold collect any sulphate of cupreine that has crystallised out on a tared filter; dry, and weigh.

Sulphate of quinine should not contain much more than 5 per cent. of sulphates of other cinchona alkaloids.

QUININÆ HYDROCHLORAS.

Hydrochlorate of Quinine.

Obtained from the same barks as sulphate of quinine, the separated alkaloid being neutralised by hydrochloric acid.

Characters and Tests.—In crystals resembling those of sulphate of quinine, but generally somewhat larger. It is soluble in about 34 parts of water, or about 3 parts of spirit, at common temperatures, and very soluble in the boiling liquids. It gives the general reactions of quinine, and is liable to the same impurities as the sulphate of quinine.

CINCHONIDINÆ SULPHAS.

Sulphate of Cinchonidine.

It may be obtained from the mother-liquors of the crystallisation of sulphate of quinine by further concentration, purification by crystallisation from alcohol, and finally from hot water.

Characters and Tests.—In colourless silky crystals, usually acicular. Soluble in water, alcohol, or ether; almost insoluble in chloroform or in solution of ammonia; readily soluble in diluted acids. The solution in water has a neutral or faintly alkaline reaction; twists a ray of polarised light to the left; when acidified is not distinctly fluorescent. The aqueous solution yields a white precipitate with solution of tartarated soda, and in the filtrate from this mixture solution of ammonia occasions not more than a slight turbidity.

CINCHONINÆ SULPHAS.

Sulphate of Cinchonine.

It may be obtained from the mother-liquors of the crystallisation of the sulphates of quinine, cinchonidine, and quinidine, by precipitating with caustic soda, washing it with spirit until free from other alkaloids, dissolving in sulphuric acid, and allowing to crystallise.

Characters and Tests.—Hard, colourless, short, prismatic crystals, with a vitreous lustre. Soluble in water and in chloroform; almost insoluble in ether and in solution of ammonia; readily soluble in rectified spirit and in diluted acids. The aqueous solution has a bitter taste, a neutral or faintly alkaline reaction, and twists a ray of polarised light to the right; its acidified solution is not fluorescent.

OFFICIAL PREPARATIONS OF RED CINCHONA BARK.

Decoctum Cinchonæ.
Extractum Cinchonæ Liquidum.
Infusum Cinchonæ Acidum.
Tinctura Cinchonæ.
„ „ **Composita.**

OFFICIAL PREPARATIONS OF QUININE.

Ferri et Quininæ Citras. } From the Sulphate.
Tinctura Quininæ Ammoniata. } From the Sulphate.
Vinum Quininæ. } From the Sulphate.
Tinctura Quininæ. From the Hydrochlorate.

Therapeutics.—Cinchona preparations are valuable remedies in all kinds of intermittent fevers; also valuable tonics and astringents in cases of debility with weak heart; they generally prove more beneficial than quinine for those of relaxed habit.

Quinine, cinchonidine, and cinchonine are tonics and antiperiodics; given to improve the general health. Quinine cures the various forms of ague and remittent fever; is a valuable remedy for neuralgia. In large doses quinine is given to reduce temperature, and is then called an antipyretic. It sometimes produces an effect called quinism, that is, a noise in the ears, deafness, headache, and wakefulness.

Antipyretic Value of the Chief Cinchona Alkaloids (Hager):—

Quinine (sulphate) . . .	100
Quinidine	90
Cinchonidine	70
Cinchonine	40

Doses.—Powdered bark, 10 to 60 grains; decoction, 1 to 2 ounces; infusion, 1 to 2 ounces; liquid extract, 5 to 10 minims; either tincture, ½ to 2 drachms. Quinine sulphate or hydrochlorate, 1 to 10, or more grains, according to the case, but 1 grain as a general tonic; either tincture, ½ to 2 drachms; wine, ½ to 1 ounce. Cinchonidine or cinchonine sulphates, 1 to 10 grains.

IPECUCUANHA.

Ipecacuanha.

The dried root of *Cephaëlis Ipecacuanha.*

Characters.—In pieces, from 2 to 4 inches long, and about the size of a small quill. It consists of two parts, namely, a central, inert, whitish, woody axis; and a thick cortical portion, which is brownish, greyish-brown, or reddish-brown, irregularly annulated, and having a resinous fracture. Taste somewhat acrid and bitter; odour slight and peculiar, more especially when powdered. Its active constituents are, an alkaloid called *emetine*, and *ipecacuanhic acid.* These are only found in the bark.

Official Preparations.

Pilula Ipecacuanhæ c. Scillâ.
Pulvis ,, Co.
Trochisci Ipecacuanhæ.
Vinum ,,

Contained in Pilula Conii Co., Trochisci Morphinæ et Ipecac.

Therapeutics.—Expectorant, diaphoretic, and emetic; given in chest and catarrhal affections. In India it has proved of great value for the treatment of dysentery.

Doses.—As an emetic, 15 to 30 grains of the simple powder; of the wine, 5 to 30 minims as an expectorant, 2 to 6 drachms as an emetic; of the pill, 5 to 10 grains; of the compound powder, 5 to 15 grains; of the lozenges, 4 or more daily.

Adulterants.—Several roots are known as false ipecacuanha; they are chiefly as follows:—

1. Large striated ipecacuanha, which is the root of the *Psychotria emetica.*
2. Small striated ipecacuanha, a root of uncertain origin.
3. Undulated ipecacuanha, which is the root of *Richardsonia scabra.*

All of the above are easily distinguished from the true root by the absence of the closely-arranged rings or corrugations on the bark.

CATECHU.

Catechu.

An extract from the leaves and young shoots of *Uncaria Gambier.*

Characters.—In cubes, or masses of variable size, formed of more or less agglutinated cubes. The separate cube are usually about 1 inch square on each side, deep reddish-brown externally, pale cinnamon-brown internally, dry, breaking readily with a dull earthy fracture, and when viewed under the microscope presenting myriads of very small acicular crystals. Taste at first bitter and very astringent, but subsequently sweetish: no odour. Contains *catechin*, *catechuic acid*, and a colouring matter named *quercetin.*

OFFICIAL PREPARATIONS.

Infusum Catechu.	**Tinctura Catechu.**
Pulvis ,, Co.	**Trochisci ,,**

Therapeutics.—Powerful astringent; given in diarrhœa, hæmorrhages, and mucous discharges. The lozenges are useful in relaxed sore throat.

Doses.—Compound powder, 10 to 40 grains; tincture, $\frac{1}{2}$ to 2 drachms; infusion, $\frac{1}{2}$ to 2 ounces; lozenges, 4 or more daily.

N.O. VALERIANACEÆ.

Botanical name.	Part used.	Habitat.
VALERIANA OFFICINALIS.	Rhizome.	Indigenous.

VALERIANA RHIZOMA.

Valerian Rhizome.

The dried rhizome and rootlets of *Valeriana officinalis.*

Characters and Test.—A short erect rhizome, entire or sliced, dark yellowish-brown externally, and giving off numerous slender, brittle, shrivelled rootlets, longitudinally striated, 3 or 4 inches long, of the same colour as the rhizome; rhizome and rootlets whitish internally. Odour developed in the process of drying, strong, peculiar, and disagreeable; taste unpleasant, camphoraceous, and slightly bitter. Yields volatile oil and *valerianic acid* when distilled with water.

OFFICIAL PREPARATIONS.

Infusum Valerianæ. **Tinctura Valerianæ.**
Tinctura Valerianæ Ammoniata.

Therapeutics.—Stimulant and antispasmodic; given in hysteria, chorea, and epilepsy.

Doses.—Infusion, ½ to 2 ounces; either tincture, ½ to 2 drachms.

N.O. COMPOSITÆ.

Botanical name.	Part used.	Habitat.
ANACYCLUS PYRETHRUM.	Root.	Algiers.
ARTEMISIA MARITIMA.	Flowers.	Turkestan.
ANTHEMIS NOBILIS.	,,	Indigenous.
TARAXACUM OFFICINALE.	Root.	,,
ARNICA MONTANA.	Rhizome.	Central Europe.
LACTUCA VIROSA.	Herb.	Indigenous.

PYRETHRI RADIX.

Pellitory Root.

The dried root of *Anacyclus Pyrethrum.*

Characters.—In unbranched pieces, from 2 to 4 inches long, and from ½ to ¾ inch thick, cylindrical or somewhat tapering, and covered by a thickish, brown, shrivelled bark, studded by dark-coloured receptacles of resin. Breaks with a close fracture, the fractured surface presenting a radiated appearance. Inodorous, but when chewed causing a burning and pricking sensation over the whole mouth and throat, causing a flow of saliva.

OFFICIAL PREPARATION.

Tinctura Pyrethri.

Therapeutics.—Used as a stimulant and sialagogue to relieve toothache and neuralgia.

SANTONICA.

Santonica.

The dried unexpanded flower-heads or capitula of *Artemisia maritima*, var. *Stechmanniana.* Sometimes called Semen-contra and Worm seed.

Characters.—About $\frac{1}{10}$ inch in length, oblong-ovoid, obtuse, pale greenish-brown, nearly smooth; resembling seeds in appearance, but consisting of from twelve to eighteen imbricated involucral scales with a broad, thick, yellowish-green midrib, enclosing three to five somewhat tubular florets. Odour, more especially when rubbed, strong, peculiar; taste bitter. Its chief constituents are *santonin*, the anhydride of santoninic acid, and a small quantity of essential oil.

OFFICIAL PREPARATION.

Santoninum.

SANTONINUM.

Santonin.

Santonin is made by boiling the above flower-heads with slaked lime and water. To the solution thus obtained hydrochloric acid is added, which throws down a precipitate of santonin. The santonin is decolorised with charcoal, and crystallised from alcohol. The crystals should be kept from light, or they turn yellow.

Characters and Tests.—Colourless, flat, rhombic prisms, feebly bitter, fusible and sublimable when gently heated, scarcely soluble in cold water, but freely in chloroform and in boiling rectified spirit. Added to warm alcoholic solution of potash, it yields a violet-red colour. Sunlight renders it yellow. Ignited with free access of air, it burns without leaving any residue. It combines with soda to form a crystalline santonate of sodium.

OFFICIAL PREPARATION.

Trochisci Santonini.

Therapeutics.—Anthelmintic; used as a remedy for the round worm (*Ascaris Lumbricoides*). It is usual to give the drug with, or follow it by, a dose of castor oil. Repeated doses sometimes produce xanthopsy or yellow vision; also stain the urine yellow. In large doses it is poisonous, causing convulsions.

Doses.—Santonica, 10 to 60 grains; of santonin, 2 to 5 grains; lozenges, 1 to 6 daily.

ANTHEMIDIS FLORES.

Chamomile Flowers.

The dried single and double flower-heads or capitula of *Anthemis nobilis*. From cultivated plants.

Characters.—The single chamomile flowers of commerce are those in which the capitula have some yellow tubular florets in the centre, surrounded by a variable number of those which are white and ligulate; the double flowers are those in which all or nearly all the florets are white and ligulate. In both kinds the receptacle is solid, conical, and densely covered with chaffy scales; and both varieties have a strong aroma and very bitter taste. They contain a volatile oil and a bitter principle.

OFFICIAL PREPARATIONS.

Extractum Anthemidis. **Infusum Anthemidis.**
Oleum Anthemidis.

Therapeutics.—Aromatic stomachic, and tonic; used in dyspepsia.

Dose.—Extract, 2 to 10 grains; infusion, 1 to 3 ounces; oil, 1 to 5 minims.

TARAXACI RADIX.

Dandelion Root.

The fresh and dried roots of *Taraxacum officinale.* Collected in the autumn.

Characters.—Root when fresh frequently a foot or more in length, and $\frac{1}{2}$ inch or more in diameter, smooth and yellowish-brown externally, whitish within. It breaks readily with a short fracture, and a milky juice exudes, the fractured surface presenting faint concentric rings. When dried it is more or less shrivelled, deeply furrowed longitudinally, dark-brown or blackish, breaks with a short fracture, and the exposed surface shows a pale-yellow, porous, central, woody axis, surrounded by a thick whitish bark, with a variable number, according to its size, of irregular, well-marked, concentric rings. The chief constituents of the root are *taraxacin*, *taraxacerin*, *inulin*, and *levulin*. Mannite has been obtained from the fermented juice.

OFFICIAL PREPARATIONS.

Decoctum Taraxaci (dried root).
Extractum ,, (fresh root).
,, ,, Liquidum.
Succus ,,

Therapeutics.—Laxative, tonic, and diuretic; acts especially on the liver, increasing its activity.

Doses.—Decoction, 1 to 3 ounces; extract, 5 to 30 grains; liquid extract, $\frac{1}{2}$ to 2 drachms; succus, 1 to 4 drachms.

ARNICÆ RHIZOMA.

Arnica Rhizome.

The dried rhizome and rootlets of *Arnica montana.*

Characters.—A slender rhizome, with contorted wiry roots; on the upper side the remains of leaves are often seen; its odour is slightly aromatic. Arnica root contains in small quantity an alkaloid called *arnicine.*

OFFICIAL PREPARATION.

Tinctura Arnicæ.

Therapeutics.—Stimulant and diaphoretic. The tincture is a popular application for bruises and chilblains, but Dr. Garrod says, "Spirits of wine answer equally as well."

Dose.—Tincture, ½ to 1 drachm.

Adulteration.—E. M. Holmes has found arnica mixed with the roots of *Geum urbanum* or Herb Bennet. It is larger than arnica, and surrounded with rootlets; hence is not a rhizome, like arnica.

LACTUCA.

Lettuce.

The flowering herb of *Lactuca virosa.*

Characters.—The prickly lettuce is a tall herb, with an acrid milky juice. The plant is biennial, yielding in the second year leaves with spiny teeth, and a prickly midrib. *Lactucarium* is the name of a substance prepared from this plant, and largely used on the Continent; it consists of the exuded dried juice, and contains *lactucerin*, *lactucin*, and *lactucic acid.*

OFFICIAL PREPARATION.

Extractum Lactucæ.

Therapeutics.—Slight anodyne and soporific.

Dose.—Extract, 5 to 15 grains.

N.O. LOBELIACEÆ.

Botanical name.	Part used.	Habitat.
LOBELIA INFLATA.	Herb.	N. America.

LOBELIA.

Lobelia.

The dried flowering herb of *Lobelia inflata.*

Characters.—Usually sold packed in rectangular paper parcels made up of the chopped herb, consisting of stems, flowers, fruits, and seeds. The stems are angular and occasionally pink. Leaves hairy, irregularly toothed.

The active principle is a volatile alkaloid called *lobeline.*

OFFICIAL PREPARATIONS.

Tinctura Lobeliæ.

,, ,, Ætherea.

Therapeutics.—Expectorant and diaphoretic, in large doses emetic. Given in spasmodic asthma and affections of the air passages.

Dose.—Of either tincture, 10 to 30 minims.

N.O. ERICACEÆ.

Botanical name.	Part used.	Habitat.
ARCTOSTAPHYLOS UVA-URSI.	Leaves.	Indigenous.

UVÆ URSI FOLIA.

Bearberry Leaves.

The dried leaves of *Arctostaphylos Uva-ursi.* From indigenous plants.

Characters.—Obovate, ½ to 1 inch long, narrowing towards the base, the upper surface shining and deeply impressed with a network of veins. Bruised they give a tea-like odour; taste very astringent. They contain *arbutin*, *ericolin* tannic and gallic acids.

OFFICIAL PREPARATION.

Infusum Uvæ Ursi.

Therapeutics.—Astringent and diuretic; given in chronic catarrhal diseases of the bladder.

Dose.—Infusion, 1 to 2 ounces.

N.O. SAPOTACEÆ.

Botanical name.	Part used.	Habitat.
DICHOPSIS GUTTA.	Concrete Juice.	Eastern Archipelago.

GUTTA PERCHA.

Gutta Percha.

The concrete juice of *Dichopsis Gutta*, and of several other trees of the natural order *Sapotaceæ.*

Characters.—In pieces of a light-brown or chocolate colour, tough, somewhat flexible, plastic above 120° F., insoluble in water or alcohol; but almost entirely soluble in chloroform, and entirely so in oil of turpentine, carbon disulphide, or benzol.

By shaking its solution in chloroform with an equal volume of alcohol, it is precipitated in a nearly pure white form.

OFFICIAL PREPARATION.

Liquor Gutta Percha.

Uses.—The solution is used in the preparation of Charta Sinapis.

N.O. STYRACEÆ.

Botanical name.	Part used.	Habitat.
STYRAX BENZOIN.	Resin.	Siam and Sumatra.

BENZOINUM.

Benzoin, or Gum Benjamin.

A balsamic resin obtained from *Styrax Benzoin*, and probably from one or more other species of Styrax. It is generally procured by making deep incisions in the bark of the trees, and allowing the liquid that exudes to concrete by exposure to the air.

Characters.—It is found in commerce in two varieties, called *Siam* and *Sumatra*. The *Siam* variety is most esteemed, and is formed of flat tears or drops loosely agglutinated into a mass. Sometimes the tears are embedded in a dark-brown resin, which gives the mass a mottled or granite-like appearance. Benzoin has a pleasant balsamic odour, and but very little taste; its chief constituents are *benzoic* and *cinnamic* acids. Of the former it yields 16 to 20 per cent. It is soluble in alcohol and in solution of potash.

ACIDUM BENZOICUM. $HC_7H_5O_2$.

Benzoic Acid.

Not chemically pure.

Obtained by sublimation from the dry resin, or by boiling the resin with lime to form benzoate of lime, then adding hydrochloric acid to precipitate the benzoic acid.

Characters.—Light feathery crystals, volatile when heated, sparingly soluble in water, freely in alcohol and ether. Treated with strong sulphuric acid, it should not blacken. Made neutral with ammonia, it gives a flesh-coloured precipitate with ferric chloride.

OFFICIAL PREPARATIONS OF BENZOIN.

Tinctura Benzoini Co.
Adeps Benzoatus.

Benzoic acid is contained in—

Tinctura Camphoræ Co.
„ Opii Ammoniata.
Ammonii Benzoas.
Trochisci Acidi Benzoici.

Therapeutics.—Stimulant and expectorant. The tincture is given in chronic bronchitis, and used externally as an antiseptic. Benzoic acid is a diuretic, and has a stimulating effect upon the bladder, hence is given in diseases of that organ. Benzoic acid, when taken internally, is found in the urine as hippurates.

Doses.—Tincture, ½ to 1 drachm; benzoic acid, 10 to 15 grains.

N.O. TERNSTRŒMIACEÆ.

Botanical name.	Part used.	Habitat.
Camellia Thea.	Leaves.	China.

CAFFEINA.

Caffeine.

An alkaloid, also called Theine and Guaranine, obtained from the dried leaves of *Camellia Thea*, or the dried seeds of *Coffea arabica*, by evaporating aqueous infusions from which astringent and colouring matters have been removed.

Characters and Tests.—Colourless, silky, inodorous, acicular crystals. Soluble in 80 parts of cold water, the solution having a faintly bitter taste and being neutral to litmus; very soluble in chloroform; sparingly soluble in ether. Treated with a crystal of chlorate of potassium and a few drops of hydrochloric acid, and evaporated to dryness, a reddish residue results, which becomes purple when moistened with ammonia. This reaction is analogous to that of murexid.

CAFFEINÆ CITRAS.

Citrate of Caffeine.

A weak compound of caffeine and citric acid, made by mixing equal weights of the two in the presence of a little water, and evaporating to dryness.

Characters and Tests.—A white inodorous powder with an acid and faintly bitter taste, and an acid reaction on litmus. It is soluble in a mixture of 2 parts of chloroform and 1 part of rectified spirit. With a little water it forms a clear syrupy solution, which on dilution yields a white precipitate of caffeine that redissolves when 10 parts of water have been added. Heated in the air, the salt chars and burns, leaving a mere trace of ash.

Therapeutics.—Stimulant, causing wakefulness; also diuretic. Given in migraine and cardiac dropsy.

Dose.—Caffeine, 1 to 5 grains; citrate of caffeine, 2 to 10 grains.

N.O. OLEACEÆ.

Botanical name.	Part used.	Habitat.
FRAXINUS ORNUS.	Exudation.	Sicily.
OLEA EUROPEA.	Oil.	S. Europe.

MANNA.

Manna.

A concrete saccharine exudation, obtained by making transverse incisions in the stems of cultivated trees of *Fraxinus Ornus.*

Characters.—The finest manna is found in the form of three-edged sticks, 4 to 8 inches long, 1 inch or more wide. Its structure is porous, friable, and crystalline; colour pale-yellow; taste sweet. It contains 60 to 80 per cent. *mannite*, $C_6H_6(HO)_6$, also some dextrine and glucose. Mannite is a hexatomic alcohol; it may be extracted by boiling manna with rectified spirit, from which, on cooling, the mannite separates in crystals. Manna does not undergo vinous fermentation in contact with yeast.

Therapeutics.—Mild laxative, used as a domestic medicine.

Dose.—$\frac{1}{2}$ to 4 drachms.

OLEUM OLIVÆ.

Olive Oil.

The oil expressed from the ripe fruit of *Olea europea*, the yield being about 70 per cent.

Characters.—Pale-yellow or greenish-yellow, with a very faint agreeable odour, and a bland oleaginous taste; congeals partially at about 36° F. Its chief constituents are *olein* and *palmitin*, compounds of glycerine with oleic and palmitic acids.

OFFICIAL PREPARATIONS IN WHICH IT ENTERS.

Charta Epispastica.
Emplastrum Ammoniaci cum Hydrargyro.
Emplastrum Hydrargyri.
,, Picis.
,, Plumbi.
,, Saponis Fuscum.
Enema Magnesii Sulphatis.
Linimentum Ammoniæ.
Linimentum Calcis.
,, Camphoræ.
Unguentum Cantharidis.
,, Hydrargyri Compositum.
Unguentum Hydrargyri Nitratis.
Unguentum Veratrinæ.

SOAPS.

The official soaps are :—

Sapo Animalis (curd soap).
,, Durus (hard ,,).
,, Mollis (soft ,,).

Preparation and Characters of Soaps.—Soaps are compounds of fatty acids with alkaline and other bases. Sapo Durus, or Hard Soap, is made by combining olive oil with caustic soda; oleate of sodium is formed, and glycerine set free in the process. Sapo Mollis, or Soft Soap, is made by combining olive oil with caustic potash; oleate of potassium being formed, and glycerine set free. Sapo Animalis, or animal soap, is made from stearin and soda; hence is a Stearate of Sodium. Animal soap is considered here for the sake of convenience.

The above soaps are soluble in water, and almost entirely in rectified spirit. The soft variety is gelatinous and usually green; the hard kinds are horny.

OFFICIAL PREPARATIONS OF SOAPS.

Linimentum Potasii Iodidi cum Sapone.
Linimentum Terebinthinæ (soft soap).
Suppositoria Morphiæ cum Sapone.
Suppositoria Acidi Tannici cum Sapone.

Linimentum Saponis.
Pilula Saponis Co.
Suppositoria Acidi Carbolici cum Sapone.
Emplastrum Saponis.
,, Saponis Fuscum.

Hard soap is contained in the following pills :—

Pilula Aloës Barbadensis.
,, ,, et Asafœtidæ.
,, ,, Socotrinæ.
,, Cambogiæ Co.
Pilula Phosphori
,, Rhei Co.
,, Scillæ Co.
,, Scammonii Co.

GLYCERINUM. $C_3H_5(HO)_3$.

Glycerine.

An alcohol obtained from fats by the process of saponification. Originally it was a by-product of lead plaster and soap making, but is now made on a large scale by passing steam at a high temperature through fats. If the fat employed be olive oil, then, under the influence of the steam, the following change occurs :—

$$\underset{\substack{\text{Glyceryl oleate,}\\\text{or olive oil.}}}{C_3H_5(Ol)_3} + \underset{\text{Water.}}{3H_2O} = \underset{\substack{\text{Glyceryl hydrate,}\\\text{or glycerine.}}}{C_3H_5(HO)_3} + \underset{\substack{\text{Hydrogen oleate,}\\\text{or oleic acid.}}}{3HOl.}$$

The glycerine and acid distil together, and condense in separate layers.

Characters.—Glycerine is a colourless syrupy fluid, sp. gr., 1·25, having a sweet taste. It is freely soluble in alcohol and ether; exposed to the air it absorbs water; heated it burns with a pale blue flame; heated with strong sulphuric acid, irritating vapours of acrolein are evolved; mixed with a solution of borax and bicarbonate of sodium, it causes effervescence. Its solution should give no precipitate with nitrate of silver, sulphide of ammonium, oxalate of ammonium, or chloride of barium. These tests show absence of chlorides, metals, as lead, iron, or copper, lime, and sulphates.

OFFICIAL PREPARATIONS.

Glycerinum Acidi Carbolici.
,, ,, Gallici.
,, ,, Tannici.
,, Aluminis.
Glycerinum Amyli.
,, Boracis.
,, Plumbi Subacet.
,, Tragacanthæ.

Therapeutics of Olive Oil, Soap, and Glycerine.—Olive oil is demulcent and laxative; used locally as a lubricant. Soap is mainly valued as a detergent; in pharmacy it is used as a pill excipient. Soap liniments are used as lubricants to sprains and painful parts. Glycerine is employed in pharmacy for its solvent powers, also as an adjunct to pills to prevent their hardening; internally it has been given as a substitute for cod liver oil.

Dose.—Olive oil, 1 to 8 drachms; glycerine, ½ to 4 drachms.

N.O. APOCYNACEÆ.

Botanical name.	Part used.	Habitat.
GELSEMIUM NITIDUM.	Rhizome.	S. America.

GELSEMIUM.

Yellow Jasmine.

The dried rhizome and rootlets of *Gelsemium nitidum*.

Characters.—Nearly cylindrical, from ½ to 6 inches or more in length, and commonly from ¼ to ¾ inch in diameter, with small rootlets attached to, or mixed with, the larger pieces; light yellowish-brown externally, and marked longitudinally by dark-purplish lines; fracture splintery; bark thin, presenting silky fibres in its liber, and closely attached to a pale-yellow porous woody axis, with evident medullary rays, and with or without pith. Odour somewhat narcotic and aromatic; taste bitter.

It contains a poisonous alkaloid *gelsemine*, also *gelseminic acid*. The latter gives an intense and beautiful blue fluorescence with alkalies. The author isolated the alkaloid in a crystalline form, and showed that it has a colour reaction much like that given by strychnine.

OFFICIAL PREPARATIONS.

Extractum Gelsemii Alcoholicum. **Tinctura Gelsemii.**

Therapeutics.—Anæsthetic and sedative. Drs. Ringer and Murrell have shown gelsemium to be a powerful respiratory poison, causing death from paralysis of the respiration. Given in migraine and neuralgia, exerting most power over the fifth nerve. It has been used with decided success in several cases of neuralgia of the dental nerves, even when the teeth were carious. Five minim doses of the tincture have been recommended every half hour in gall stones. It is highly spoken of for sleeplessness, especially of drunkards and from over excitement.

It sometimes benefits asthma, and is said to be useful in ovarian neuralgia.

Dose.—Extract, ½ to 2 grains; tincture, 5 to 20 minims.

N.O. LOGANIACEÆ.

Botanical name.	Part used.	Habitat.
STRYCHNOS NUX-VOMICA.	Seed.	India.

NUX VOMICA.

Nux Vomica.

The seeds of *Strychnos Nux-vomica.*

Characters.—The seed is disc-shaped; colour ash-grey or yellowish-green; about 1 inch in diameter, ¼ inch thick. It is convex on the ventral, concave on the dorsal side. On its edge is a small protuberance, from which runs a faintly projecting line called the raphe; this line passes to a central scar called the hilum or umbilicus. The seeds are covered with flat satiny hairs, of a light-grey colour. The seeds are said to contain three alkaloids—*strychnine*, *brucine*, and *igasurine*, and an acid called *strychnic* or *igasuric acid.*

OFFICIAL PREPARATIONS.

Extractum Nucis Vomicæ. **Tinctura Nucis Vomicæ.**
Strychnina.

STRYCHNINA.

Strychnine.

This alkaloid is prepared by treating a solution of extract of nux vomica with acetate of lead, whereby a precipitate of igasurate of lead is thrown down, acetate of strychnine and brucine being left in solution. To the solution ammonia is now added, the strychnine and brucine being precipitated. The precipitate is now dissolved in alcohol, distilled to a small volume, and set aside to crystallise. Strychnine is the first to separate, leaving the brucine in the mother-liquor.

Characters and Tests.—Strychnine forms rectangular prisms, sparingly soluble in water, insoluble in absolute alcohol and ether, freely soluble in chloroform. Its taste is intensely bitter. If strong sulphuric acid be added to a crystal of strychnine it does not char; if now a particle of bichromate of potassium be added, a beautiful violet colour is produced, soon passing to brown and green. This constitutes the special test for strychnine.

Brucine is not official, but is distinguished from strychnine by its giving a deep-red colour with strong nitric acid, turned to violet on adding stannous chloride.

Official Preparation.

Liquor Strychninæ Hydrochloratis.

Therapeutics. — Bitter tonic and stomachic; given in dyspepsia, constipation, debility, paralysis, and impotence; also used in chorea and other spasmodic affections.

Doses.—Extract, $\frac{1}{4}$ to 2 grains; tincture, 5 to 20 minims; strychnine, $\frac{1}{32}$ to $\frac{1}{12}$ grain; solution of strychnine, 3 to 10 minims.

N.O. ASCLEPIADACEÆ.

Botanical name.	Part used.	Habitat.
Hemidesmus Indicus.	Root.	India.

HEMIDESMI RADIX.

Hemidesmus Root.

The dried root of *Hemidesmus Indicus*.

It is found in pieces 6 to 8 inches long, somewhat tortuous; it has numerous transverse cracks, and smells of tonquin bean.

OFFICIAL PREPARATION.

Syrupus Hemidesmi.

Therapeutics.—Mild alterative, and diuretic; used as a substitute for sarsaparilla.

Dose.—Syrup, 1 to 2 drachms.

N.O. GENTIANACEÆ.

Botanical names.	Part used.	Habitat.
GENTIANA LUTEA.	Root.	Central Europe.
OPHELIA CHIRATA.	Herb.	India.

GENTIANÆ RADIX.

Gentian Root.

The dried root of *Gentiana lutea*.

Characters.—Either in diagonally-cut slices, or cylindrical pieces, several inches long, from ½ to about 1 inch thick. The pieces are wrinkled longitudinally, and marked transversely on the upper part with numerous rings. Colour yellowish-brown; smell peculiar. The crown of the root is often clothed with the scaly bases of leaves. It contains a bitter principle called *gentianin;* also *gentianic acid.*

OFFICIAL PREPARATIONS.

Extractum Gentianæ. **Infusum Gentianæ Co.**
Tinctura Gentianæ Co.

Therapeutics.—Bitter tonic and stomachic; extensively prescribed both with alkalies and acids.

Doses.—Extract, 2 to 10 grains; tincture, ½ to 2 drachms; infusion, ½ to 2 ounces.

CHIRATA.

Chiretta.

The dried plant, *Ophelia Chirata.* Collected when the fruit begins to form.

Characters.—Root 2 to 3 inches long, usually unbranched. Stem 3 feet or more long, rounded below and slightly quadrangular above, branched in a dichotomous manner. Leaves ovate, 5—7-ribbed; flowers small, numerous, panicled. No odour; taste very bitter. The bitter principles of the herb are *ophelic acid* and *chiratin.*

OFFICIAL PREPARATIONS.

Infusum Chiratæ. **Tinctura Chiratæ.**

Therapeutics.—Bitter tonic and stomachic.

Dose.—Infusion, ½ to 2 ounces; tincture, ½ to 2 drachms.

N.O. CONVOLVULACEÆ.

Botanical name.	Part used.	Habitat.
IPOMŒA PURGA.	Tubercles.	Mexico.
CONVOLVULUS SCAMMONIA.	Gum Resin and Root.	Asia Minor.

JALAPA.

Jalap.

The dried tubercules of *Ipomœa Purga.*

Characters and Test.—Irregularly oblong, somewhat ovoid, varying much in size, the larger frequently incised, or cut into halves or quarters. Externally dark-brown, more or less irregularly furrowed and wrinkled, and marked with paler-coloured transverse lines or scars; internally dirty-yellowish. Odour faint and smoky; taste sweetish, acrid, and nauseous. Treated as for the preparation of resin of jalap, not less than 10 per cent. of resin should be obtained. The resin of this drug is its chief active principle, and is often called *jalapin.* Resin of jalap is distinguished from resin of scammony by the fact that only 10 per cent. of the resin of jalap is soluble in ether, whereas resin of scammony is entirely soluble.

Substitutions.—The following roots have been offered as substitutes for Jalap: 1. *Ipomœa Orizabensis*, in pieces larger than true jalap, and easily known by its radiate transverse section. 2. Tampico Jalap, the product of *Ipomœa simulans.* It closely resembles true jalap, but the roots are smaller and generally more elongated. There is an absence of the transverse scars found on the true jalap.

OFFICIAL PREPARATIONS.

Resina Jalapæ.	**Pulvis Jalapæ Co.**
Extractum ,,	**Tinctura ,,**

Contained in Pulvis Scammonii Co.

JALAPÆ RESINA.

Jalap Resin.

Made by exhausting jalap in No. 40 powder with rectified spirit, adding a little water to the tincture obtained, then distilling off the spirit. Finally, the residue of resin is washed with warm water.

Characters and Tests.—In dark-brown opaque fragments, translucent at the edges, readily reduced to a pale-brown powder, easily soluble in rectified spirit, insoluble in oil of turpentine. The powder yields little or nothing to warm water, and not more than 10 per cent. to ether.

Enters into Pilula Scammonii Co.

Therapeutics.—Hydragogue purgative, acting on the small intestines. Given in inflammations and dropsy; also as a remedy for thread-worms.

Doses.—Simple powder, 10 to 30 grains; compound powder, 20 to 60 grains; resin, 2 to 5 grains; extract, 5 to 15 grains; tincture, ½ to 2 drachms.

SCAMMONIÆ RADIX.

Scammony Root.

The dried root of *Convolvulus Scammonia.*

Characters.—Unbranched, of varying lengths and sizes, twisted and woody, cylindrical except towards its upper end, where it is enlarged, longitudinally furrowed, greyish-brown externally, pale-brown or whitish within, and when fractured small fragments of pale yellowish-brown resin may often be seen on the surface of the fracture.

OFFICIAL PREPARATION.

Resina Scammoniæ.

SCAMMONIUM.

Scammony.

A gum-resinous exudation, obtained by incision from the living root of *Convolvulus Scammonia,* hardened in the air.

Characters and Tests.—As usually found in commerce it is in flattish cakes or pieces of irregular form and of varying sizes, ash-grey or blackish-brown externally, and sometimes sprinkled over with a greyish-white powder. It is very brittle, and when fractured the surface is resinous, shining, more or less porous, and of a uniform dark greyish-black colour; easily triturated into an ash-grey powder, which forms with water a smooth emulsion. Odour peculiar, cheesy. It does not effervesce with hydrochloric acid, showing absence of carbonates. A cooled decoction is not rendered blue by solution of iodine, showing absence of starch. Ether removes about 75 per cent. of resin; and what remains is chiefly soluble gum, with a little moisture.

OFFICIAL PREPARATIONS.

Mistura Scammonii. **Resina Scammoniæ.**

SCAMMONIÆ RESINA.

Resin of Scammony.

Made either from scammony root or scammony by exhaustion with rectified spirit, distilling off the spirit, and washing the residue of resin with hot water.

Characters and Tests.—In brownish translucent pieces, brittle, resinous in fracture, of a sweet fragrant odour if prepared from the root. It cannot, alone, form an emulsion with water. Its tincture does not render the fresh-cut surface of a potato blue, showing absence of guaiacum resin. Ether dissolves it entirely.

OFFICIAL PREPARATIONS.

Confectio Scammonii. **Pulvis Scammonii Co.**
Pilula Scammonii Co.

Contained in the following:—

Extractum Colocynthidis Co. Pilula Colocynthidis Co.

Therapeutics.—Drastic purgative, generally given in combination with other drugs; used in dropsical affections, and as a vermifuge.

Doses.—Scammony, or the resin, 5 to 10 grains; compound powder, 10 to 20 grains; confection, 10 to 30 grains; pill, 5 to 15 grains; mixture, 1 to 2 ounces.

N.O. SOLANACEÆ.

Botanical name.	Part used.	Habitat.
CAPSICUM FASTIGIATUM.	Fruit.	Zanzibar.

CAPSICI FRUCTUS.

Capsicum Fruit.

The ripe fruit of *Capsicum fastigiatum.*

Characters.—A small membranous pod, of an orange-red colour and conical form, $\frac{1}{2}$ to 1 inch long, containing a number of small flat seeds. The active principle is *capsaicin*, a white crystalline substance isolated by Dr. Thresh.

OFFICIAL PREPARATION.

Tinctura Capsici.

Therapeutics.—Stimulant; given in diarrhœa, dyspepsia, and dipsomania. In warm countries it is much used as a condiment.

Dose.—Powder, ½ to 1 grain; tincture, 5 to 15 minims.

N.O. ATROPACEÆ.

Botanical names.	Part used.	Habitat.
ATROPA BELLADONNA.	Root and leaves.	Indigenous.
DATURA STRAMONIUM.	Seeds.	,,
HYOSCYAMUS NIGER.	Leaves.	,,
NICOTIANA TABACUM.	,,	,,

BELLADONNÆ FOLIA.

Belladonna Leaves.

The fresh leaves, with the branches to which they are attached, of *Atropa Belladonna;* also the leaves separated from the branches and carefully dried; gathered, when the fruit has begun to form, from plants growing wild or cultivated in Britain.

Characters and Test.—Leaves all shortly stalked, from 3 to 8 inches long, broadly ovate, acute, entire, smooth. The expressed juice of the fresh leaves, or an infusion of the dried leaves, dropped into the eye, dilates the pupil. Belladonna owes its activity to the presence of the alkaloid *atropine*, which is combined in the plant with malic acid.

OFFICIAL PREPARATIONS OF LEAVES.

Extractum Belladonnæ. **Succus Belladonnæ.**
Tinctura Belladonnæ.

BELLADONNÆ RADIX.

Belladonna Root.

The root of *Atropa Belladonna*, from plants growing wild or cultivated in Britain, and carefully dried; or imported in a dried state from Germany.

Characters and Test.—In rough irregular branched pieces, from 3 to 12 inches long, often split longitudinally, and from ½ inch to 2 inches or more thick; generally marked at their upper end by the hollow bases of the stems which they once bore. The root is covered with a dirty-grey or brownish integument, which is easily scraped off by the nail, when the exposed surface presents a whitish appearance. It breaks readily with a short fracture. An infusion dropped into the eye dilates the pupil.

OFFICIAL PREPARATIONS OF ROOT.

Atropina. **Linimentum Belladonnæ.**
Extractum Belladonnæ Alcoholicum.

ATROPINA.

Atropine.

Made by adding slaked lime to a tincture of belladonna root, then filtering. This treatment sets free the atropine, malate of lime being formed. To the filtered solution sulphuric acid is now added in slight excess; sulphate of lime falls, and is filtered off. The solution is now distilled to one-third its volume. Carbonate of potassium is now added till the solution is nearly neutral. On standing six hours much colouring matter separates. To the clear liquid carbonate of potassium is now added in excess, and sets the atropine free. The free atropine is dissolved out by shaking the mixture with chloroform, and the chloroform on withdrawal yields on evaporation atropine. It is purified by digestion with warm alcohol and animal charcoal.

Characters and Tests.—In colourless acicular crystals, sparingly soluble in water, more readily in alcohol and in ether. Its solution in water has an alkaline reaction, gives a yellow precipitate with perchloride of gold. A grain boiled with a grain of perchloride of mercury and a few drops of water gives a red precipitate of mercuric oxide. It powerfully dilates the pupil.

OFFICIAL PREPARATIONS.

Atropinæ Sulphas. **Atropinæ Unguentum.**

ATROPINÆ SULPHAS.

Sulphate of Atropine.

Made by neutralising atropine with dilute sulphuric acid, and evaporating to dryness.

Characters and Tests.—Nearly colourless, crystalline or pulverulent, soluble in water, forming a solution which is neutral to test-paper, and when applied to the eye dilates the pupil. It leaves no ash when burned with free access of air.

OFFICIAL PREPARATIONS.

Liquor Atropinæ Sulphatis. **Lamellæ Atropinæ.**

Therapeutics.—Belladonna and its preparations applied to the eye powerfully dilate the pupil; applied locally it lessens pain and checks inflammation, and is used in neuralgia and rheumatism. Given internally it stimulates respiration and circulation, is useful in constipation, incontinence of urine, sweating, salivation, and nervous diseases. Applied to the female breast the extract stays the secretion of milk, and applied to poisoned wounds acts most beneficially by staying inflammation. Atropine is largely used in eye diseases, and antagonises the action of calabar bean. The sweating produced by $\frac{1}{3}$ of a grain of pilocarpine is checked at once by the injection of $\frac{1}{25}$ grain of atropine (Dr. Ringer).

Dose.—Extract, $\frac{1}{4}$ to 1 grain; tincture, 5 to 30 minims; juice, 5 to 30 minims; atropine, $\frac{1}{100}$ to $\frac{1}{50}$ of a grain.

STRAMONII SEMINA.

Stramonium Seeds.

The dried ripe seeds of *Datura Stramonium.*

Characters.—About $\frac{1}{6}$ inch long, reniform, flattened, brownish-black, finely pitted, wrinkled. Odour disagreeable when bruised; taste bitterish. They contain a poisonous alkaloid called *daturine*, said to be identical with *hyoscyamine.*

Official Preparations.

Extractum Stramonii. **Tinctura Stramonii.**

Therapeutics. — Similar to belladonna, but has more action on the respiratory organs. Used as an antispasmodic in asthma and convulsive cough. The leaves, made into cigars, are smoked for asthma.

Doses.—Extract, $\frac{1}{4}$ to $\frac{1}{2}$ grain; tincture, 5 to 30 minims.

HYOSCYAMI FOLIA.

Henbane Leaves.

The fresh leaves and flowers, with the branches to which they are attached, of *Hyoscyamus niger;* also the leaves separated from the branches, and flowering tops, carefully dried. Collected from biennial plants, growing wild or cultivated in Britain, when about two-thirds of the flowers are expanded.

Characters.—Leaves varying in length, sometimes as much as 10 inches, with or without a stalk, alternate, exstipulate, triangular-ovate or ovate-oblong, acute, undulated, irregularly toothed, sinuated, or pinnatifid, pale-green, and glandular-hairy, particularly on their under surface. The branches are sub-cylindrical, and also glandular-hairy. The fresh herb has a strong heavy odour. The flowers are usually pale-yellow, and marked with purple veins. Fruits are sometimes present, being in the form of a bottle-shaped calyx, enclosing a capsule, and dehiscing transversely by a convex lid. The active principle is an alkaloid, *hyoscyamine*, isomeric with *atropine* and *daturine*.

OFFICIAL PREPARATIONS.

Extractum Hyoscyami. **Succus Hyoscyami.**
Tinctura Hyoscyami.

Contained in Pill of Colocynth and Henbane.

Therapeutics.—Similar to belladonna, but milder. It prevents griping when added to pills in the form of extract. The tincture or juice is given as an anodyne in cough and spasm. The alkaloid hyoscyamine powerfully dilates the pupil.

Doses.—Extract, 5 to 10 grains; tincture or juice, ½ to 1 drachm.

Adulteration.—The leaves of *Datura Stramonium* or Thorn Apple have been offered for sale as henbane (Elborne). They are known from henbane by having a long petiole, and absence of hairs. The odour of stramonium is but slight, that of henbane heavy and narcotic.

TABACI FOLIA.

Leaf Tobacco.

The dried leaves of *Nicotiana Tabacum*.

Characters.—Large, ovate-lanceolate or oblong, margin entire; have a characteristic odour and nauseous acrid taste. The active principle is a volatile alkaloid called *nicotine*, forming crystalline salts with much difficulty.

Therapeutics.—Irritant, cardiac sedative, and diuretic. Given in the form of enema, it produces muscular relaxation.

N.O. SCROPHULARIACEÆ.

Botanical name.	Part used.	Habitat.
DIGITALIS PURPUREA.	Leaves.	Indigenous.

DIGITALIS FOLIA.

Foxglove Leaves.

The leaves of *Digitalis purpurea.* Collected from wild British plants of the second year's growth, when about two-thirds of the flowers are expanded, and carefully dried.

Characters.—From 4 to 12 or more inches in length, 2 to 6 inches broad, with a winged petiole of varying length; ovate or ovate-lanceolate, subacute, crenate, or irregularly crenate-dentate, prominently veined, somewhat rugose, slightly hairy and dull-green above, densely pubescent, and paler beneath.

The active principle is a glucoside called *digitalin.*

OFFICIAL PREPARATIONS.

Infusum Digitalis. **Tinctura Digitalis.**

Therapeutics.—Sedative and soporific, also diuretic; given in heart disease, dropsy, mania, and delirium tremens. A poisonous dose stops the heart in a state of spasm.

Dose.—Powdered leaf, ½ to 2 grains; infusion, ½ to 4 drachms; tincture, 5 to 30 minims.

Substitutions.—The leaves of *Inula Conyza* and *I. Helenium.* They are distinguished from the leaves of digitalis by their almost entire margins, and the veins of *I. Helenium* diverging nearly at right angles with the midrib.

N.O. LABIATÆ.

Botanical name.	Part used.	Habitat.
LAVANDULA VERA.	Essential oil.	Indigenous.
MENTHA PIPERITA.	,,	,,
,, VIRIDIS.	,,	,,
,, ARVENSIS.	Stearopten.	Japan.
ROSMARINUS OFFICINALIS	Oil.	Indigenous.
THYMUS VULGARIS.	Stearopten.	,,
MONARDA PUNCTATA.	,,	,,

OLEUM LAVANDULÆ.

Oil of Lavender.

The oil distilled in Britain from the flowers of *Lavandula vera*; like many essential oils, it is a mixture of an eleopten and stearopten.

OFFICIAL PREPARATIONS.

Spiritus Lavandulæ. **Tinctura Lavandulæ Co.**

Enters into Linimentum Camphoræ Co.

Therapeutics.—Stimulant and carminative, used in flatulence and colic.

Dose.—Oil, 1 to 5 minims; tincture or spirit, ½ to 1 drachm.

OLEUM MENTHÆ PIPERITÆ.

Oil of Peppermint.

The oil distilled in Britain from the fresh flowering herb, *Mentha piperita.* It consists of a stearopten called *menthol*, and a liquid portion called *menthene.*

OFFICIAL PREPARATIONS.

Menthol.	**Essentia Menthæ Piperitæ.**
Aqua Menthæ Piperitæ.	**Spiritus „ „**

Contained in:—

Pilula Rhei Co. Tinctura Chlorofomi et Morphinæ.

MENTHOL

Menthol.

A stearopten obtained by cooling the oil distilled from the fresh herb of *Mentha arvensis*, *vars. piperascens et glabrata*, and of *Mentha piperita.*

Characters and Tests.—In colourless acicular crystals usually more or less moist from adhering oil, or in fused crystalline masses. Its melting-point should not exceed 110° F. The hardest masses do not melt below 108° F. It has the odour and flavour of peppermint, producing warmth on the tongue, or, if air is inhaled, a sensation of coolness. It is sparingly soluble in water, and readily soluble in rectified spirit, the solutions having a neutral reaction. Boiled with sulphuric acid diluted with half its volume of water, menthol acquires an indigo-blue or ultramarine colour, the acid becoming brown. It should entirely be dissipated by the heat of a water-bath.

Adulterations.—Glass and sulphate of magnesia have been found in menthol; both remain as residues on evaporation.

Therapeutics.—Stimulant and carminative; given in flatulence and colic. Menthol is applied to the face to relieve neuralgia.

Doses.—Oil, 1 to 5 minims; essence, 5 to 15 minims; spirit, ½ to 1 drachm; water, ½ to 2 ounces; menthol ½ to 2 grains.

OLEUM MENTHÆ VIRIDIS.

Oil of Spearmint.

The oil distilled from the fresh flowering spearmint *Mentha viridis.*

OFFICIAL PREPARATION.

Aqua Menthæ Viridis.

Therapeutics.—Stimulant and carminative.

Doses.—Oil, 1 to 5 minims; water, ½ to 2 ounces.

OLEUM ROSMARINI.

Oil of Rosemary.

The oil distilled from the flowering tops of *Rosmarinus officinalis.*

Contained in:—

Linimentum Saponis.
Spiritus Rosmarini.
Tinctura Lavandulæ Co.

Therapeutics.—Stimulant and carminative.

Dose.—Oil, 1 to 5 minims; spirit, ½ to 1 drachm.

THYMOL.

Thymol.

A stearopten obtained from the volatile oils of *Thymus vulgaris*, *Monarda punctata*, and *Carum Ajowan* by saponifying with caustic soda, and treating the separated soap with hydrochloric acid, or from a distilled fraction of the oil by exposure at a low temperature. It may be purified by recrystallisation from alcohol.

Characters.—*Vide* N.O. *Umbeliferæ.*

N.O. POLYGONACEÆ.

Botanical name.	Part used.	Habitat.
RHEUM PALMATUM.	Root.	China and Thibet.

RHEI RADIX.

Rhubarb Root.

The root, more or less deprived of its bark, sliced and dried, of *Rheum palmatum*, *Rheum officinale*, and probably other species.

Characters.—In somewhat cylindrical, barrel-shaped, conical, plano-convex, or irregularly formed pieces; the outer surface covered with a bright yellowish-brown powder, rounded or somewhat angular, smooth or more or less wrinkled, and marked beneath the powder with reddish-brown or dark rusty-brown lines, intermixed in a yellowish-brown substance, and frequently presenting small scattered starlike spots. Frequently the pieces are bored with a hole, which contains the remains of the cord used to suspend them to dry, or the cord has been removed. Hard, compact, fracture uneven, presenting a marbled appearance, and in some cases exhibiting a ring of starlike spots. Odour peculiar, and when chewed it feels gritty between the teeth. The chief constituents of rhubarb are *rheotannic acid*, *chrysophanic acid*, and *oxalate of lime.*

OFFICIAL PREPARATIONS.

Extractum Rhei. **Pulvis Rhei Compositus.**
Infusum ,, **Syrupus Rhei.**
Pilula Rhei Composita. **Tinctura ,,**
Vinum Rhei.

Therapeutics.—Stomachic and purgative, its purgative action being followed by constipation.

Doses.—Tincture, or wine, or syrup, 1 to 4 drachms; extract or simple powder, 3 to 8 grains; compound powder 20 to 60 grains; infusion, ½ to 2 ounces; pill, 5 to 10 grains.

Adulteration.—The powder may have been made from English-grown root, which is generally said to be of low quality. Good rhubarb, when burnt, yields 13 to 14 per cent. ash; English rhubarb 11 per cent.

N.O. MYRISTICEÆ.

Botanical name.	Part used.	Habitat.
MYRISTICA FRAGRANS.	Seed.	Malay Islands.

MYRISTICA.

Nutmeg.

The dried seed of *Myristica fragrans* divested of its hard coat or shell.

Characters.—Oval or roundish, varying in length, but rarely exceeding 1 inch, greyish-brown externally, and marked with reticulated furrows; the transverse section has a marbled appearance. Odour strong and pleasantly aromatic.

Its aromatic properties are due to an essential oil, composed of *myristicin* and *myristicol.* By expression the seed yields a solid fat, incorrectly known as oil of mace.

Official Preparations.

Oleum Myristicæ. **Oleum Myristicæ Expressum.**

Contained in :—

Pulvis Catechu Co.	Spiritus Armoraciæ Co.
„ Cretæ Aromaticus.	Tinctura Lavandulæ Co.

Therapeutics.—Aromatic stimulant, and carminative; mostly used as a flavouring agent.

Dose.—Oil, 1 to 5 minims; spirit, ½ to 1 drachm.

N.O. LAURACEÆ.

Botanical name.	Part used.	Habitat.
Cinnamomum Camphora.	Stearopten.	China.
„ zeylanicum.	Bark and Oil.	Ceylon.
Nectandra Rodiæi.	Bark.	British Guiana.
Sassafras officinale.	Root.	N. America.

CAMPHORA.

Camphor.

It is a stearopten obtained from the *Cinnamomum Camphora.* The wood of the tree is submitted to distillation, and the distilled product, on cooling, deposits the crystals of camphor, which are purified by pressure and sublimation. The liquid expressed portion is becoming an article of commerce, and known as oil of camphor.

Characters.—In solid, colourless, translucent, crystalline masses, which present numerous fissures when of any size; somewhat tough, but readily powdered if moistened with rectified spirit, ether, or chloroform; it has a powerful penetrating odour and a pungent taste, followed by a sensation of cold. It floats on water, burns readily with a bright smoky flame, volatilises somewhat rapidly even at ordinary temperatures, and sublimes entirely when heated; it is very slightly soluble in water (1 in 1300), but readily soluble in rectified spirit, ether, or chloroform. By the action of nitric acid it yields camphoric acid. Rubbed with an equal part of chloral hydrate, it forms a syrupy fluid.

A second variety of camphor is known, called *Borneo camphor.* It is denser than ordinary camphor, sinking in water. By the action of nitric acid it forms ordinary camphor.

OFFICIAL PREPARATIONS.

Aqua Camphoræ.	**Linimentum Camphoræ Co.**
Linimentum ,,	**Spiritus ,,**

Tinctura Camphoræ Co.

Contained in :—

Linimentum Belladonnæ.	Linimentum Terebinthinæ.
,, Chloroformi.	Linimentum Terebinthinæ Aceticum.
,, Hydrargyri.	Unguentum Hydrargyri Compositum.
,, Opii.	
,, Saponis.	
,, Sinapis Co.	

Therapeutics.—Stimulant and antispasmodic; also antiseptic; in large doses a poison. Given in spasmodic affections, hysteria, and chordee. Used locally as a stimulant to stiff or painful parts.

Dose.—Camphor, 1 to 5 grains; spirit, 5 to 20 minims; compound tincture, 15 to 60 minims; water, ½ to 2 ounces.

CINNAMOMI CORTEX.

Cinnamon Bark.

The dried inner bark of shoots from the truncated stocks or stools of the cultivated cinnamon tree, *Cinnamomum zeylanicum.* Imported from Ceylon, and distinguished in commerce as Ceylon cinnamon. Its chief constituent is an essential oil, consisting mostly of *cinnamomic aldehyd.*

Characters and Test.—In closely rolled quills, each about $\frac{3}{8}$ inch in diameter, and containing several smaller quills. Yellowish-brown externally, and marked by little scars or holes and faint shining wavy lines; darker brown on its inner surface. Odour fragrant; taste warm, sweet, and aromatic. A decoction when cool is not coloured blue by iodine.

OLEUM CINNAMOMI.

Oil of Cinnamon.

The oil distilled from cinnamon bark.

Official Preparations.

Aqua Cinnamomi.
Oleum ,,
Pulvis Cinnamomi Co.
Tinctura ,,

Also contained in :—

Decoctum Hæmatoxyli.
Infusum Catechu.
Pulvis Catechu Compositus.
,, Cretæ Aromaticus.
Pulvis Kino Compositus.
Tinctura Cardamomi Composita.
,, Catechu.
,, Lavandulæ Composita.
Vinum Opii.

Therapeutics.—Stimulant, aromatic, and carminative.

Doses.—Compound powder, 5 to 15 grains; tincture, $\frac{1}{2}$ to 2 drachms; oil, 1 to 3 minims.

Adulteration.—Cinnamon is often adulterated with the bark of *Cassia cinnamomum*, which is known by its always being in single quills, and dark portions of the outer bark being present, and its cold decoction gives a blue colour with tincture of iodine.

NECTANDRÆ CORTEX.

Bebeeru Bark.

The dried bark of *Nectandra Rodiæi.*

Characters.—In flattish dense pieces, from 1 to 2 feet long, 2 to 6 inches broad, and $\frac{1}{4}$ inch or more thick.

Externally greyish-brown, internally dark cinnamon-brown, and with fine longitudinal striæ. It is very hard and brittle; inodorous, but with a strong bitter astringent taste.

Its active principle is the alkaloid *beberine;* resin and tannic acid are also present.

OFFICIAL PREPARATION.

Beberinæ Sulphas.

BEBERINÆ SULPHAS.

Sulphate of Beberine.

Made by exhausting the bebeeru bark with diluted sulphuric acid, then adding lime to remove the acid in the form of sulphate of lime; the clear solution filtered from the sulphate of lime is treated with ammonia, and the precipitated beberine collected, dried, and dissolved in boiling spirit; the spirit is removed by distillation, and the residue converted into a sulphate by dissolving in sulphuric acid, evaporating and drying at a heat not exceeding 140° F.

Characters.—It forms dark-brown scales, soluble in alcohol and water; its taste is very bitter; the watery solution gives a yellow precipitate with solution of potash. The phosphate of beberine has been obtained by Dott in yellow crystals.

Therapeutics.—Tonic and antiperiodic; given in debility and periodic headaches.

Dose.—Sulphate of beberine, 2 to 10 grains.

SASSAFRAS RADIX.

Sassafras Root.

The dried root, reduced to chips or shavings, of *Sassafras officinale.*

Characters.—In large branched pieces more or less covered with bark. Bark rough and greyish-brown, or rusty-brown externally; internally smooth, glistening, and rusty-brown, with an agreeable aromatic odour, and a peculiar aromatic, somewhat astringent taste. Usually seen in pharmacies in large transversely-cut chips. Its odorous constituent is an essential oil, which at a low temperature deposits crystals of sassafras stearopten.

Contained in Decoctum Sarzæ Co.

Therapeutics.—Stimulant, alterative, and diaphoretic.

N.O. ARISTOLOCHIACEÆ.

Botanical name.	Part used.	Habitat.
ARISTOLOCHIA SERPENTARIA.	Rhizome.	United States.
" RETICULATA.	"	"

SERPENTARIA RHIZOMA.

Serpentary Rhizome.

The dried rhizome and rootlets of *Aristolochia Serpentaria*, or of *Aristolochia reticulata*.

Characters.—About 1 inch long and $\frac{1}{8}$ inch in diameter, marked above by the remains of former stems, and giving off below an interlacing tuft of numerous slender branched rootlets, of from 2 to 4 inches long; dull yellowish-brown. Odour camphoraceous.

The rhizome and rootlets of *Aristolochia reticulata* agree essentially with the above, but the rhizome is a little thicker, and the rootlets longer, coarser, and less matted together.

Serpentary contains an essential oil; also a bitter principle called *aristolochin*.

OFFICIAL PREPARATIONS.

Infusum Serpentariæ. **Tinctura Serpentariæ.**

Contained in Tinctura Cinchonæ Co.

Therapeutics.—Stimulant, diaphoretic, and diuretic; given in dyspepsia, rheumatism, and fevers.

Dose.—Infusion, $\frac{1}{2}$ to 2 ounces; tincture, $\frac{1}{2}$ to 2 drachms.

N.O. THYMELACEÆ.

Botanical names.	Part used.	Habitat.
DAPHNE MEZEREUM.	Bark.	Central Europe.
,, LAUREOLA.	,,	,,

MEZEREI CORTEX.

Mezereon Bark.

The dried bark of *Daphne Mezereum*, or of *Daphne Laureola.*

Characters.—In long, thin, more or less flattened strips, which are commonly folded or rolled into disks; or in small quills of various lengths. Inner surface whitish, silky, very tough, and covered externally by an olive-brown or somewhat reddish-brown, readily separable corky layer. Applied to the skin in the fresh state it causes vesication.

The acrid principle of mezereon has not been isolated, but a glucoside called *daphnin* has been obtained from the bark.

OFFICIAL PREPARATION.

Extractum Mezerei Æthereum.

Contained in Decoctum Sarzæ Co.

Therapeutics.—Used locally as an irritant or vesicant.

N.O. MORACEÆ.

Botanical names.	Part used.	Habitat.
FICUS CARICA.	Fruit.	S. Europe.
MORUS NIGRA.	Juice.	,,

FICUS.

Fig.

The dried fruit of *Ficus Carica.*

Characters.—The fig consists of the enlarged hollow succulent receptacle, bearing very numerous seedlike achenes on its inner surface. It is compressed, irregular in form, soft, tough, and covered with a saccharine efflorescence. Taste luscious; odour fruity and pleasant. The sweetness is due to grape sugar.

Contained in Confectio Sennæ.

Therapeutics.—Mild laxative.

MORI SUCCUS.

Mulberry Juice.

The juice of the ripe fruit of *Morus nigra.*

Characters.—Of a dark-violet or purple colour, and a refreshing acidulous saccharine taste. Specific gravity, about 1·060. It contains grape sugar and malic acid.

OFFICIAL PREPARATION.

Syrupus Mori.

Therapeutics.—Refrigerant.

Dose.—1 to 4 drachms of syrup.

N.O. CANNABINACEÆ.

Botanical name.	Part used.	Habitat.
CANNABIS SATIVA.	Flowering Tops.	India, Persia.
HUMULUS LUPULUS.	Strobiles.	Indigenous.

The dried flowering or fruiting tops of the female plants of *Cannabis sativa,* grown in India, and from which the resin has not been removed. It is known in India as Gunjah, or Ganga, also as Bhang.

Characters.—In more or less aggregated masses, from about 1½ to 2½ inches in length, and consisting of the tops of one or more alternate branches bearing the remains of the flowers and smaller leaves with a few ripe fruits, and the whole pressed together by adhesive resinous matter; or it is composed of straight, stiff, woody stems several inches long, surrounded by the branched flower-stalks. It is rough to the touch, very brittle, of a dusky-green colour, with scarcely any taste, but having a faint, peculiar, narcotic, not unpleasant odour.

Indian hemp contains *cannaben*, *hydride of cannaben*, and a small quantity of alkaloid is said to be present.

OFFICIAL PREPARATIONS.

Extractum Cannabis Indicæ. **Tinctura Cannabis Indicæ.**

Therapeutics.—Soporific, anodyne, and antispasmodic; also a nervine stimulant. Given in nervous diseases, neuralgia, spasmodic cough, and asthma.

Dose.—Extract, $\frac{1}{4}$ to 2 grains; tincture, 5 to 20 minims.

LUPULUS.

Hop.

The dried strobiles of *Humulus Lupulus*, from plants cultivated in England.

Characters.—More or less compressed and broken in commercial specimens. When entire, about $1\frac{1}{4}$ inch long; oblong-ovoid or rounded in form, and consisting of a number of thin, greenish-yellow or brownish, membranous, imbricated scales or bracts; each of which has at its base a small rounded achene, sprinkled over with brownish-yellow glands (*lupulin*), the whole being attached to a hairy undulated axis. Odour agreeably aromatic; taste bitter, and aromatic.

LUPULIN.—A glandular powder; on burning it yields about 17 per cent. ash, ether dissolves 60 to 70 per cent.

OFFICIAL PREPARATIONS.

Extractum Lupuli. **Infusum Lupuli.**
Lupulin. **Tinctura Lupuli**

Therapeutics.—Tonic and stomachic, slightly soporific; given in dyspepsia.

Dose.—Extract, 1 to 5 grains; tincture, ½ to 2 drachms; infusion, ½ to 2 ounces; lupulin, 2 to 5 grains.

N.O. EUPHORBIACEÆ.

Botanical name.	Part used.	Habitat.
Croton Eleuteria.	Bark.	Bahamas.
,, Tiglium.	Oil.	Ceylon.
Ricinus communis.	,,	E. Indies.
Mallotus philippinensis.	Glands.	,,

CASCARILLÆ CORTEX.

Cascarilla Bark.

The dried bark of *Croton Eleuteria.*

Characters.—In quills, from 1 to 3 inches or more in length, and from ⅙ to ½ inch in diameter, covered with a dull-brown, easily separable corky layer, which is more or less coated with a silvery- or greyish-white lichen, giving it a chalked appearance; fracture brown, short, and resinous. It has a warm and nauseously bitter taste, and an agreeable aromatic odour, more especially when burned. It contains volatile oil, resin, and a bitter principle called *cascarillin.*

Official Preparations.

Infusum Cascarillæ. **Tinctura Cascarillæ.**

Therapeutics.—Aromatic stomachic and tonic; used in dyspepsia and bronchitis.

Dose.—Infusion, ½ to 2 ounces; tincture, ½ to 2 drachms.

Adulteration.—This bark has been found mixed with the bark of *Croton lucidus.* The adulterant is known by its outer bark being of a fawn colour, and its tincture not rendering water turbid (E. M. Holmes).

CROTON SEMINA.

Croton Seeds.

The seeds of the *Croton Tiglium.*

Characters.—Croton seeds are about ½ inch long, ⅓ inch broad, ovoid and bluntly oblong, covered with a brown shell, which on scraping becomes black; the shell encloses a white oily kernel. The chief constituent of croton seeds is a fixed oil (*oleum crotonis*), which they yield to the extent of 50 to 60 per cent.

OFFICIAL PREPARATION.

Oleum Crotonis.

OLEUM CROTONIS.

Croton Oil.

The oil expressed in Britain from the seeds of *Croton Tiglium.*

Characters.—Brownish-yellow to dark reddish-brown, fluorescent, with a viscid consistence, which is increased by age, a faint, peculiar, somewhat rancid, disagreeable odour, and an oily acrid taste. Entirely soluble in alcohol.

OFFICIAL PREPARATION.

Linimentum Crotonis.

Therapeutics.—Powerful irritant and drastic purge; used in constipation and cerebral affections. Applied externally it produces pustules; the liniment is used as a counter-irritant.

Dose.—Oil, ½ to 2 minims, dropped on sugar, or mixed with butter.

RICINI SEMINA.

Castor Seeds.

The seeds of *Ricinus communis.*

Characters.—About $\frac{2}{3}$ inch long and $\frac{1}{3}$ inch wide, ovoid and flattened. The seed is prolonged into a short beak, and covered with a shining-grey epidermis, variously marked with brownish bands and spots. The kernel is white. The castor seed owes its importance to the presence of a fixed oil (*oleum ricini*), obtained by expression, and which it yields to the extent of 50 per cent. The purgative principle upon which the action of the oil depends has not been isolated. The seeds are reputed to possess ten times the purgative action of the oil.

OLEUM RICINI.

Castor Oil.

The oil expressed from the seeds of *Ricinus communis.*

Characters.—Viscid, colourless, or pale straw-yellow, having scarcely any odour, and a mild taste at first, but subsequently acrid and unpleasant. Entirely soluble in one volume of absolute alcohol, and in two volumes of rectified spirit.

Contained in :—

Linimentum Sinapis Co. Pilula Hydrargyri Subchloridi Co.
Collodium Flexile.

Therapeutics.—Mild, quick, and safe purgative; given in inflammatory disorders of the bowels, often combined with opium in some forms of diarrhœa.

Dose.—2 to 8 drachms.

KAMALA.

Kamala.

This drug is a powder which consists of the minute glands and hairs obtained from the surface of the fruits of *Mallotus philippinensis.*

Characters and Tests.—A fine granular mobile powder of a brick-red colour, and nearly tasteless and inodorous. Water has scarcely any effect on it, even at a boiling temperature, but it forms deep-red solutions with alcohol, ether, or chloroform. When examined by the microscope it is seen to consist of irregularly spherical, flattened or depressed garnet-red glands with wavy surfaces, mixed with nearly colourless thick-walled stellate hairs. On ignition in air it should yield 4 or 5, or at most 10 per cent. of ash. It contains a red colouring matter soluble in alcohol, and a neutral principle, *rottlerin.*

Therapeutics.—Anthelmintic, used for the expulsion of tape-worm. It purges freely.

Dose.—½ to 2 drachms.

N.O. PIPERACEÆ.

Botanical names.	Part used.	Habitat.
PIPER NIGRUM.	Fruit.	E. Indies.
,, CUBEBA.	,,	Java.
,, ANGUSTIFOLIUM.	Leaves.	Peru.

PIPER NIGRUM.

Black Pepper.

The dried unripe fruit of *Piper nigrum.*

Characters.—Roundish, usually about ⅕ inch in diameter; pericarp thin, blackish-brown, wrinkled, and containing a hard, smooth, roundish seed of a yellowish-brown or grey colour. Odour aromatic; taste pungent and bitterish. Its active principle is a crystalline substance called *piperin,* isomeric with morphine, but almost devoid of colour, taste, or smell. The pungent principle appears to be an oleo-resin.

OFFICIAL PREPARATION.

Confectio Piperis.

Also contained in:—

Confectio Opii.

Pulvis Opii Co.

Therapeutics.—Stimulant and stomachic; used in the treatment of piles and gonorrhœa.

Dose.—Confection, 1 to 2 drachms.

CUBEBA.

Cubebs.

The dried unripe full-grown fruit of *Piper Cubeba.*

Characters.—Globular, about $\frac{1}{6}$ inch in diameter, blackish- or greyish-brown, much wrinkled, and tapering below into a rounded stalk which is continuous with, and permanently attached to, the pericarp. Beneath the shrivelled skin is a hard, brown, smooth shell, in which the seed is contained in the mature fruit; but in commercial cubebs this seed is mostly so little developed that the pericarp is nearly empty. Taste warm, aromatic, and somewhat bitter. It contains an aromatic oil, a resin, and a crystalline body termed *cubebin.*

OFFICIAL PREPARATIONS.

Oleo-resina Cubebæ. **Oleum Cubebæ.**
Tinctura Cubebæ.

Therapeutics.—Stimulant, used for gonorrhœa and gleet; often given in form of a paste with copaiba.

Doses.—Powder, $\frac{1}{2}$ to 2 drachms; oil, 5 to 20 minims; tincture, $\frac{1}{2}$ to 2 drachms.

MATICÆ FOLIA.

Matico Leaves.

The dried leaves of *Piper angustifolium.*

Characters.—From about 4 to 8 inches long, oblong-lanceolate, tapering towards the apex, cordate and unequal at the base, greenish-yellow, very shortly petiolate, reticulated with sunken veins and tessellated above, the veins prominent beneath, and the depressions formed by them densely clothed with hairs. The leaves, as commonly seen in commerce, are more or less broken, folded, and compressed into a brittle mass, and have mixed with them a variable proportion of the jointed stems, flowers, and fruit. Matico contains an essential oil, likewise *artanthic acid* and tannin.

Official Preparation.

Infusum Maticæ.

Therapeutics.—Stimulant, similar to cubebs; is reputed to possess styptic properties, and for that reason the leaf is sometimes applied to allay local bleeding.

Dose.—Infusion, 1 to 3 ounces.

N.O. SALICACEÆ.

Botanical name.	Part used.	Habitat.
SALIX ALBA, AND OTHER SPECIES.	Glucoside.	Indigenous.

SALICINUM.

Salicin.

A crystalline glucoside, obtained from the bark of *Salix alba* and other species of Salix, and the bark of various species of Populus.

Process.—To a strong decoction of willow bark oxide of lead is added, and the mixture kept warm and agitated from time to time; this treatment removes tannin and colouring matters. The clear solution is now evaporated to a small volume, and set aside to crystallise; the crystals are further purified by maceration with charcoal and recrystallising.

Characters and Tests.—Colourless shining crystals, with a very bitter taste. Soluble in about 28 parts of water, or a similar quantity of spirit at common temperatures; insoluble in ether. Sulphuric acid colours it red. A small quantity, heated with a little bichromate of potassium, a few drops of sulphuric acid, and some water, yields *hydride of salicyl*, an oil having the odour of meadow-sweet. The crystals melt when heated, and emit vapours having the odour of meadow-sweet. On ignition in air it leaves no residue.

Therapeutics.—Tonic and antispasmodic; given in ague and neuralgia, but chiefly in acute rheumatism. When given by the mouth it may be detected in the urine by the urine giving a purple colour with ferric chloride.

Dose.—5 to 15 grains.

N.O. CUPULIFERÆ.

Botanical names.	Part used.	Habitat.
QUERCUS ROBUR.	Bark.	Indigenous.
„ LUSITANICA.	Galls.	Asia Minor.

QUERCUS CORTEX.

Oak Bark.

The dried bark of the smaller branches and young stems of *Quercus Robur.* Collected in spring from trees growing in Britain.

Characters.—In quills covered with a smooth, shining, silvery, or ash-grey variegated with brown, corky layer; internally cinnamon-brown or brownish-red, and longitudinally striated; fracture tough and fibrous; taste very astringent; no marked odour. It contains *querci-tannic acid*, differing from ordinary tannic acid by not being convertible into gallic acid.

OFFICIAL PREPARATION.

Decoctum Quercus.

Therapeutics.—Used as an astringent injection in leucorrhœa.

GALLA.

Galls.

These are excrescences caused by an insect (*Cynips Gallæ tinctoriæ*) puncturing the twig or young branch of the oak, and depositing its ova. The irritation produced causesa flow of juice, which surrounds the ova and develops into a gall. As the gall ripens the ova changes to maggot, pupa, and fly, the latter boring its way out and escaping. The best quality of galls are those collected before the fly has escaped.

Characters.—Hard, heavy, globular, from ½ to ¾ inch or more in diameter, tuberculated on the surface, the tubercles and intervening spaces being smooth; dark bluish-green or dark olive-green externally, yellowish or brownish-white within, with a small central cavity. Thin sections of a gall soaked in glycerine develop, on standing, fine crystals of gallic acid. Galls contain 30 to 40 per cent. of tannic acid, and about 3 per cent. of gallic acid.

OFFICIAL PREPARATIONS.

Acidum Gallicum.	**Tinctura Gallæ.**
,, Tannicum.	**Unguentum Gallæ.**
Unguentum Gallæ cum Opio.	

ACIDUM GALLICUM.

Gallic Acid.

Made by the following process: Boil one part of coarsely-powdered galls with 4 fluid parts of diluted sulphuric acid for half an hour, then strain through calico while hot; collect the crystals that are deposited on cooling, and purify these with animal charcoal and repeated crystallisation.

Characters and Tests.—Crystalline, in acicular prisms or silky needles, sometimes nearly white, but generally of a pale fawn colour. It requires about 100 parts of cold water for its solution, but dissolves in 3 parts of boiling water. Soluble also in rectified spirit. The aqueous solution gives no precipitate with solution of isinglass. It gives a bluish-black precipitate with a persalt of iron. The crystalline acid when dried at 212° F. loses 9·5 per cent. of its weight.

Heated it sublimes in a changed condition, being converted into pyrogallic acid and CO_2.

OFFICIAL PREPARATION.

Glycerinum Acidi Gallici.

ACIDUM TANNICUM.

Tannic Acid.

Made by the following process: Expose powdered galls to a damp atmosphere for two or three days, and afterwards add sufficient ether to form a soft paste. Let this stand in a well-closed vessel for four-and-twenty hours, and then, having quickly enveloped it in a linen cloth, submit it to strong pressure so as to separate the liquid portion. Reduce the pressed cake to powder, mix it with sufficient ether (to which $\frac{1}{16}$ of its bulk of water has been added) to form a soft paste, and press this as before. Mix the expressed liquids, and expose the mixture to spontaneous evaporation until, by the aid subsequently of a little heat, it has acquired the consistency of a soft extract; then place it in earthen plates or dishes, and dry in a hot-air chamber at a temperature not exceeding 212° F.

Characters.—Tannic acid forms yellow vesicular scales, not crystalline; freely soluble in water, glycerine, and alcohol. Its watery solution gives a precipitate with gelatine; also with ferric chloride and many metals. By exposure the watery solution changes to gallic acid and glucose.

OFFICIAL PREPARATIONS.

Glycerinum Acidi Tannici.
Suppositoria ,, ,,
,, ,, ,, cum Sapone.
Trochisci ,, ,,

Therapeutics.—Galls and their preparations applied externally act as powerful astringents, hence are used as styptics to allay hæmorrhages; the ointment and suppositories are useful applications for piles. Gallic acid is sometimes given internally for hæmoptysis. Glycerine of tannic acid is a valuable application for relaxed sore throats, as also the lozenge. Tannic acid is also used to lessen discharges in gleet, leucorrhœa, etc.

Dose.—Tincture of galls, ½ to 2 drachms; tannic and gallic acids, 3 to 20 grains.

N.O. ALTINGIACEÆ.

Botanical name.	Part used.	Habitat.
LIQUIDAMBAR ORIENTALIS.	Balsam.	Asia Minor.

SYRAX PREPARATUS.

Prepared Storax.

A balsam prepared from the inner bark of *Liquidambar orientalis*, by boiling the bark with water. It is purified by solution in spirit, filtration, and evaporation.

Characters and Tests.—A semi-transparent brownish-yellow semi-fluid balsam, about the consistence of thick honey, with a strong agreeable odour and balsamic taste. Heated in a test-tube on the vapour-bath, it becomes more liquid, but gives off no moisture. Its chief constituents are *styrol*, *styracin*, and *cinnamic acid.* Heated with sulphuric acid and bichromate of potassium, the odour of essential oil of almonds is evolved, benzoic aldehyd being formed, through decomposition of the cinnamic acid.

Contained in Tinctura Benzoini Co.

Therapeutics.—Stimulating, expectorant; sometimes used in the form of ointment as a cure for scabies.

SANTALACEÆ.

Botanical name.	Part used.	Habitat.
SANTALUM ALBUM.	Oil.	India.

OLEUM SANTALI.

Oil of Sandal Wood.

The oil distilled from the wood of *Santalum album.*

Characters and Tests.—Thick in consistence, pale-yellow in colour, of strongly aromatic odour, pungent and spicy flavour, and neutral or slightly acid in reaction. Its specific gravity is usually about 0·96. It is readily soluble in alcohol.

Therapeutics.—Diuretic and stimulant; given in gonorrhœa and gleet.

Dose.—10 to 30 minims.

CLASS II.

MONOCOTYLEDONS OR ENDOGENS.

N.O. ZINGIBERACEÆ.

Botanical names.	Part used.	Habitat.
ZINGIBER OFFICINALE.	Rhizome.	E. and W. Indies.
ELETTARIA CARDAMOMUM.	Seeds.	Malabar.
CURCUMA LONGA.	Rhizome.	Ceylon.

ZINGIBER.

Ginger.

The rhizomes of *Zingiber officinale.*

Characters.—Ginger of commerce is seen in two forms; one is dried with the epidermis upon it, and called coated ginger; the other is deprived of its epidermis, and called uncoated ginger. The rhizomes are 2 to 4 inches long, and made up of compressed lobe-like shoots. Colour pale-yellow; it should not be chalky on the surface. Its fracture may be either fibrous or resinous; the taste is pungent. Ginger contains an aromatic essential oil, likewise a pungent resin.

OFFICIAL PREPARATIONS.

Syrupus Zingiberis. **Tinctura Zingiberis.**
Tinctura Zingiberis Fortior.

Also contained in :—

Confectio Opii.
,, Scammonii.
Infusum Sennæ.
Pilula Scillæ Composita.
Pulvis Cinnamomi Compositus.
Pulvis Jalapæ Compositus.
,, Opii ,,
,, Rhei ,,
,, Scammonii ,
Vinum Aloes.

Therapeutics.—Aromatic stomachic; given in dyspepsia attended with flatulence, frequently combined with purgatives to allay griping.

Doses.—Powder, 5 to 20 grains; syrup, ½ to 1 drachm; tincture, 10 to 60 minims; strong tincture, 5 to 20 minims.

CARDAMOMI SEMINA.

Cardamom Seeds.

The dried ripe seeds of the *Malabar Cardamom*, *Elettaria Cardamomum.* The seeds are best kept in their pericarps, in which condition they are imported; but when required for use, they should be separated, and the pericarps rejected.

Characters.—The pericarp is a three-sided capsule, of a tough papery character, enclosing numerous seeds.

The seeds are small, irregularly angular, transversely wrinkled, dark reddish-brown externally, whitish within; odour and taste agreeably warm and aromatic. They contain a fixed and a volatile oil.

OFFICIAL PREPARATION.

Tinctura Cardamomi Co.

Contained in :—

Extractum Colocynthidis Compositum.
Pulvis Cinnamomi Compositus.
,, Cretæ Aromaticus.
Tinctura Gentianæ Composita.
,, Rhei.
Vinum Aloes.

Therapeutics.—Aromatic, stimulant; used as a flavouring agent.

Dose.—Tincture, ½ to 2 drachms.

CURCUMA.

Turmeric.

The dried rhizome of the *Curcuma longa.* The rhizomes are somewhat roundish, about the size of the small finger, and marked with concentric ridges, fracture resinous, colour orange-brown. Its chief constituent is a colouring agent called *curcumin.*

Uses.—Employed as a reagent in the form of tincture; from the tincture is made turmeric paper. Turmeric paper is pale-yellow in colour, and gives, with alkalies, a brownish-red colour; with boric acid an orange tint.

N.O. IRIDACEÆ.

Botanical name.	Part used.	Habitat.
CROCUS SATIVUS.	Stigma.	Spain.

CROCUS.

Saffron.

The three-lobed stigma, and portion of the style of the *Crocus sativus.*

Characters and Tests.—It consists of three threadlike, orange-red stigmas, thickened and tubular above, and jagged or notched at their extremities, and united below to the top of the yellow style. It is flexible, unctuous to the touch, with a peculiar, strong aromatic odour, and a bitter, somewhat aromatic taste. Rubbed on the wet finger it leaves an intense orange-yellow tint. The colouring matter of saffron is called *crocin.*

Adulteration.—Oil, chalk, sulphate of barium, and petals of the safflower and marigold have been used for this purpose. Oil is detected by the greasy stain it imparts to paper. Chalk by its effervescence with an acid. Sulphate of barium by burning the saffron, and dissolving the residue in hydrochloric acid, then adding to the solution sulphate of potassium; if barium be present, it gives a white precipitate.

OFFICIAL PREPARATION.

Tinctura Croci.

Contained in :—

Decoctum Aloes Compositum.
Pilula Aloes et Myrrhæ.
Pulvis Cretæ Aromaticus.
Tinctura Cinchonæ Composita.
„ Opii Ammoniata.
„ Rhei.

Therapeutics.—Used as a colouring agent.

N.O. LILIACEÆ.

Botanical names.	Part used.	Habitat.
ALOE VULGARIS.	Dried Juice.	W. Indies.
„ PERRYI.	„ „	Socotra.
URGINEA SCILLA.	Bulb.	Mediterranean Coast.

ALOE BARBADENSIS.

Barbadoes Aloes.

The juice, when inspissated, which flows from the transversely cut bases of the leaves of *Aloe vulgaris.* Imported from Barbadoes and the Dutch West Indian Islands, and known in commerce as Barbadoes and Curaçoa Aloes.

Characters and Tests.—Colour varying from deep reddish-brown or chocolate-brown to dark-brown or almost black; fracture usually dull, sometimes smooth and glassy, often conchoidal; opaque in mass, but in thin films translucent, and of an orange-brown tint; powder dull olive-yellow. Odour strong and disagreeable; taste bitter and nauseous. The Curaçoa variety is commonly more glassy and translucent than the ordinary Barbadoes kind, and has a distinctive odour. When moistened with rectified spirit, and examined in a thin stratum under the microscope, it exhibits numerous crystals. Almost entirely soluble in proof spirit. It contains *barbaloin.*

ALOE SOCOTRINA.

Socotrine Aloes.

The juice, when inspissated, which flows from the transversely-cut bases of the leaves of *Aloe Perryi*, and probably other species. Imported principally by way of Bombay and Zanzibar, and known in commerce as Socotrine and Zanzibar Aloes.

Characters and Tests.—Colour of various shades of reddish-brown, darkening by exposure to the air; fracture usually smooth and resinous, or rarely rough and irregular; in thin films, transparent and orange-ruby-red or orange-brown; powder bright tawny reddish-brown; odour strong and somewhat agreeable; taste very bitter. When moistened with rectified spirit, and examined in a thin stratum under the microscope, it exhibits numerous crystals. In other cases Socotrine aloes is more or less opaque and liver-coloured, and is then known as hepatic aloes. Almost entirely soluble in proof spirit. It contains *socaloin.*

ALOIN.

Aloin.

A crystalline substance extracted from aloes by solvents, and purified by recrystallisation. As obtained from the different varieties of aloes, the products differ slightly, but their medicinal properties are similar.

Characters.—Usually in tufts of acicular crystals, yellow, inodorous, and having the taste of aloes. Sparingly soluble in cold water, more so in cold rectified spirit; freely soluble in the hot fluids. Insoluble in ether. Not readily altered in acidified or neutral solutions; rapidly altered in alkaline fluids.

OFFICIAL PREPARATIONS OF BARBADOES ALOES.

Aloin.	**Extractum Aloes Barbadensis.**
Enema Aloes.	**Pilula ,, ,,**

Contained in :—

Pilula Aloes et Ferri.
„ Gambogiæ Co.
„ Colocynthidis Co.
„ „ et Hyoscyami.

Official Preparations of Socotrine Aloes.

Aloin.
Decoctum Aloes Co.
Enema ,,
Extractum Aloes Socotrinæ.
Pilula Aloes et Asafœtida.
Pilula Aloes et Myrrhæ.
,, ,, Socotrinæ.
Tinctura Aloes.
Vinum ,,

Contained in :—

Extractum Colocynthidis Co. Pilula Rhei Co. Tinctura Benzoini Co.

Therapeutics.—Purgative, acting chiefly on the lower portion of the intestinal canal; also an emmenagogue; in small doses tonic and stomachic. Given in constipation, dyspepsia, and amenorrhœa. Aloes is generally given with some other purgative, as alone it gripes.

Doses.—Of either variety of aloes or their extracts, 1 to 3 grains; of either pill, 5 to 10 grains; decoction, ½ to 2 ounces; tincture, 1 to 3 drachms; wine, 1 to 3 drachms; aloin, ½ to 2 grains.

SCILLA.

Squill.

The bulb of *Urginea Scilla*, divested of its dry outer scales, cut into slices, and dried.

Characters.—The slices as seen in the pharmacies are flattish or somewhat four-sided, curved, yellowish-white or somewhat pinkish, from about 1 to 2 inches long, translucent, inodorous, disagreeably bitter, brittle and easily pulverisable if quite dry, but tough and flexible when moist.

The active principles of squill are *scillitin* and *scillipicrin* bodies of the glucoside class.

OFFICIAL PREPARATIONS.

Acetum Scillæ.	**Pilula Scillæ Co.**
Oxymel ,,	**Syrupus ,,**

Tinctura Scillæ.

Contained in Pilula Ipecacuanhæ cum Scilla.

Therapeutics. — Stimulating, expectorant, and diuretic. Given in chest affections, bronchitis, and heart disease. In large doses it is an emetic and purgative.

Doses.—Tincture, 5 to 20 minims; acetum, 10 to 30 minims; oxymel and syrup, ½ to 1 drachm; either pill, 5 to 10 grains.

N.O. MELANTHACEÆ.

Botanical names.	Part used.	Habitat.
VERATRUM VIRIDE.	Rhizome.	United States.
SCHŒNOCAULON OFFICINALE.	Seeds.	Mexico.
COLCHICUM AUTUMNALE.	Seeds & Corm.	Indigenous.

VERATRI VIRIDIS RHIZOMA.

Green Hellebore Rhizome.

The dried rhizome and rootlets of *Veratrum viride.*

Characters.—Entire, or transversely or longitudinally sliced or divided, and either with or without attached rootlets. When entire, from 1 to 2 inches or more in length, and ¾ inch or more in diameter, erect, obconical, obtuse or truncated at the apex, dark-brown externally, whitish within. Frequently bearing at its upper end the concentrically arranged remains of leaves, and giving off on all sides numerous much-shrivelled yellowish-white rootlets several inches long. Inodorous, but exciting sneezing when powdered. The active principles are two alkaloids, *veratrine* and *jervine.*

Official Preparation.

Tinctura Veratri Viridis.

Therapeutics.—Irritant, emetic, and purgative. Given in neuralgia, fevers, and rheumatism.

Dose.—Tincture, 5 to 20 minims.

SABADILLA.

Cevadilla.

The dried ripe seeds of *Schœnocaulon officinale.* The seeds are sometimes imported in, or mixed with, their pericarps, but these should be rejected before the seeds are used.

Characters.—About $\frac{1}{4}$ inch or less in length, narrow, fusiform, or somewhat scimitar-shaped, prolonged above into a membranous wing, somewhat compressed, shining, wrinkled, blackish-brown. Taste bitter, acrid; inodorous, but when powdered producing violent sneezing. There active principle is the alkaloid *veratrine.*

VERATRINA.

Veratrine.

An alkaloid or mixture of alkaloids obtained from cevadilla.

Process.—A strong tincture of the ground seeds is made and poured into water, the solution is filtered from precipitated resin, and treated with ammonia, which throws down a precipitate of veratrine; the veratrine is collected, dissolved in hydrochloric acid, and decolorised by animal charcoal, and finally precipitated by ammonia.

Characters and Tests.—Pale-grey, amorphous, without smell, but, even in the most minute quantity, powerfully irritating the nostrils; strongly and persistently bitter, and highly acrid; insoluble in water, soluble in spirit, in ether and in diluted acids, leaving traces of an insoluble brown resinoid matter. It dissolves in nitric acid, yielding a yellow solution, and in sulphuric acid, forming a deep red solution, which exhibits a green fluorescence by reflected light. Warmed with hydrochloric acid, it dissolves with production of a blood-red colour.

OFFICIAL PREPARATION.

Unguentum Veratrinæ.

Therapeutics.—Irritant, emetic, and purgative; slows the pulse and lowers temperature; chiefly used externally in the form of ointment for neuralgia.

Dose.—$\frac{1}{16}$ to $\frac{1}{8}$ grain.

COLCHICI CORMUS.

Colchicum Corm.

The fresh corm of *Colchicum autumnale*, collected about the end of June or beginning of July; and the same stripped of its coats, sliced transversely, and dried at a temperature not exceeding 150° F.

Characters.—Fresh corm about 1½ inch long and 1 inch broad, somewhat conical, flattened on one side, where it has a new corm in process of development, and rounded on the other; covered with an outer thin brown membranous coat, and an inner one reddish-yellow; internally white and solid, and when cut yielding a milky juice of a bitter taste and disagreeable odour. Dried slices $\frac{1}{8}$ or $\frac{1}{10}$ inch thick, yellowish at their circumference, moderately indented on one side and convex on the other, so that they are somewhat reniform in outline; the surfaces firm, whitish, amylaceous; breaking readily with a short fracture.

COLCHICI SEMINA.

Colchicum Seeds.

The seeds of *Colchicum autumnale*, collected when fully ripe, which is commonly about the end of July or beginning of August, and carefully dried.

Characters.—About $\frac{1}{10}$ inch in diameter, subglobular, a little larger than black mustard seed, slightly pointed at the hilum, reddish-brown, somewhat rough, very hard and difficult to powder; no odour; taste bitter and acrid. All parts of colchicum contain an active principle called *colchicin.*

OFFICIAL PREPARATIONS OF THE CORM.

Extractum Colchici. **Extractum Colchici Aceticum.**
Vinum Colchici.

OFFICIAL PREPARATION OF THE SEED.

Tinctura Colchici Seminum.

Therapeutics.—Sedative, irritant, cathartic, and diuretic; given in gout, rheumatism, dropsy, and skin diseases.

Dose.—Either extract, ½ to 2 grains; wine or tincture, 10 to 30 minims.

N.O. SMILACEÆ.

Botanical name.	Part used.	Habitat.
SMILAX OFFICINALIS.	Root.	S. America.

SARZÆ RADIX.

Sarsaparilla Root.

The dried root of *Smilax officinalis.* It is commonly known as Jamaica sarsaparilla, from having been formerly obtained from Central America by way of that island.

Characters.—Six or more feet in length, usually bent or folded and packed together into bundles of about 18 inches long, and 4 to 5 inches in diameter; the whole bound together by a long root of the same drug. Roots more or less furrowed, varying in thickness, but not exceeding that of a goose-quill, greyish-brown to deep reddish-brown, with numerous branched rootlets. According to the character of a transverse section, the root is called mealy or non-mealy; the latter is preferred in this country. A crystalline principle, called *parillin*, has been obtained from the root.

OFFICIAL PREPARATIONS.

Decoctum Sarzæ. **Decoctum Sarzæ Co.**
Extractum Sarzæ Liquidum.

Therapeutics.—Diuretic and alterative; mostly used as a vehicle.

Dose.—Decoctions, 2 to 10 ounces; extract, ½ to 4 drachms.

N.O. GRAMINACEÆ.

Botanical names.	Part used.	Habitat.
TRITICUM SATIVUM.	Seed.	Indigenous.
HORDEUM DISTICHON.	”	”
SACCHARUM OFFICINARUM.	Sugar.	W. Indies.

FARINA TRITICI.

Wheaten Flour.

The grain of *Triticum sativum*, ground to a fine powder, and sifted.

Wheaten flour is well known; from it is made starch and bread. The crumb of bread is called *mica panis*.

Wheat contains starch, gluten, sugar, gum, phosphates of potassium, magnesium, lime, and sodium.

AMYLUM.

Starch.

The starch procured from the grains of common wheat, *Triticum sativum*; maize, *Zea Mays*; and rice, *Oryza sativa*.

Characters and Tests.—In fine powder, or in irregular angular or columnar masses, which are readily reduced to powder; white, inodorous. When lightly rubbed in a mortar with a little cold distilled water, the mixture is neither acid nor alkaline to test-paper, and the filtered liquid does not become blue on the addition of solution of iodine. Mixed with boiling water and cooled, it gives a deep blue-black colour with iodine. Boiled with dilute sulphuric acid it changes to glucose. Nitric acid converts it into oxalic acid. Under the microscope these varieties of starch present the following characters :—1. Wheat starch. A mixture of large and small granules, which are lenticular in form, and marked with faint concentric striæ surrounding a nearly central hilum. 2. Maize starch. Granules more uniform in size, frequently polygonal, somewhat smaller than the large granules of wheat starch, and having a very distinct hilum, but without evident concentric striæ. 3. Rice starch. Granules extremely minute, nearly uniform in size, polygonal, hilum small, and without striæ.

OFFICIAL PREPARATIONS OF STARCH.

Glycerinum Amyli. **Mucilago Amyli.**

Contained in :—

Pulvis Tragacanthæ Co.
Suppositoria Acidi Tannici cum Sapone.
,, Morphinæ ,, ,,

Wheat flour is contained in Cataplasma Fermenti.

Therapeutics.—In the form of bread used as bread poultice; flour is an ingredient of yeast poultice. Starch is a demulcent, used in the form of enema as a vehicle for other remedies. Glycerine of starch is a valuable application for rough skin and chapped hands.

HORDEUM DECORTICATUM.

Pearl Barley.

The dried seed of *Hordeum distichon*, divested of its integuments. From plants cultivated in Britain.

Characters.—White, rounded, with a trace of the longitudinal furrow, in which are the remains of the yellowish-brown integuments. Taste and odour farinaceous like the cereal grains generally. Its constituents are similar to those of wheat. It contains in addition 3 per cent. of fixed oil.

Official Preparation.

Decoctum Hordei.

Therapeutics. — Decoction used as a demulcent nutrient drink. A flavouring of lemon and sugar improves it.

Dose.—Ad libitum.

SACCHARUM PURIFICATUM.

Refined Sugar.

Cane sugar, or sucrose, is obtained from the sugar cane, beetroot, and maple.

Characters and Tests.—Compact crystalline conical loaves, known in commerce as lump sugar. Readily and completely soluble in water, forming a clear bright syrup, which yields no red or yellowish precipitate, or scarcely a trace, on heating it to near the boiling-point of water for a short time with a little solution of sulphate of copper and excess of solution of potash. This test shows the absence of glucose. It breaks in the dark with emission of light. Heated it fuses, and at a temperature of 374° F. changes to a dark substance known as *caramel*, or burnt sugar.

Contained in :—

Confectio Rosæ Caninæ.
,, ,, Gallicæ.
,, Sennæ.
Extractum Sarsæ Liquidum.
Ferri Carbonas Saccharata.
Liquor Calcis Saccharatus.
Mistura Ferri Composita.
,, Guaiaci.
Mistura Spiritus Vini Gallici.
Pilula Ferri Iodidi.
Pulvis Amygdalæ Compositus.
,, Cretæ Aromaticus.
,, Glycyrrhizæ Compositus.
,, Tragacanthæ Compositus.
Sodii Citro-tartras Effervescens.
All the Syrups and Lozenges.

THERIACA.

Treacle.

The uncrystallised residue of the refining of sugar.

Characters.—A thick fermentable syrup of a golden colour, very sweet; not crystallising by rest or spontaneous evaporation. Specific gravity about 1·40.

Contained in :—

Pilula Aloes et Myrrhæ.
„ Asafœtidæ Composita.
„ Conii „
Pilula Ipecacuanhæ cum Scilla.
„ Rhei Composita.
„ Scillæ „
Tinctura Chloroformi et Morphinæ.

Therapeutics.—Sugar and treacle act as mild demulcents and nutrients, also preservatives. Sugar is used for sweetening, and treacle as a pill excipient.

N.O. CONIFERÆ.

Botanical names.	Parts used.	Habitat.
Pinus Larix.	Bark.	Central Europe.
Juniperus communis.	Oil.	N. „
„ Sabina.	Tops. Oil.	Indigenous.
Pinus australis.	Oil and Resin.	America.
„ Tæda.	„	„
„ Pinaster.	„	France.
„ sylvestris.	„	Russia.
„ balsamea.	Oleo-resin.	Canada.
„ Picea.	Resin.	Austria.

LARICIS CORTEX.

Larch Bark.

The bark of *Pinus Larix*, collected in spring, deprived of its outer rough portion and dried.

Characters.—In flattish pieces or quills of varying lengths and sizes. The outer surface is dark-red or rosy, and somewhat uneven; inner surface nearly smooth, and yellowish-white or pinkish-red, according to its age. Odour slightly balsamic and terebinthinous; taste astringent. Larch bark contains tannic acid and a crystalline substance called *larixin.*

OFFICIAL PREPARATIONS.

Tinctura Laricis.

Therapeutics.—Given to check expectoration in bronchitis.

Dose.—Tincture, ½ to 1 drachm.

OLEUM JUNIPERI.

Oil of Juniper.

The oil distilled in Britain from the unripe fruit of *Juniperus communis.* The fruit appears like a small round berry, and is composed of three fleshy bracts, which enclose three seeds. Its colour is deep-purple; taste sweet and aromatic.

Oil of juniper has the formula $C_{10}H_{16}$, being isomeri with oil of turpentine.

OFFICIAL PREPARATION.

Spiritus Juniperi.

Therapeutics.—Used as a stimulant and diuretic i dropsies.

Dose.—Oil, 2 to 10 minims; spirit, ½ to 1 drachm.

SABINÆ CACUMINA.

Savin Tops.

The fresh and dried tops of *Juniperus Sabina;* collected in spring from plants cultivated in Britain.

Characters.—Twigs densely covered with minute, imbricated, adpressed, dark-green (or when dried yellowish-green) leaves, with a large, oval, depressed, central gland on their back. Odour, when rubbed or bruised, strong and peculiar.

OFFICIAL PREPARATIONS.

Oleum Sabinæ. Tinctura Sabinæ. Unguentum Sabinæ.

OLEUM SABINÆ.

Oil of Savin.

The oil distilled in Britain from the fresh tops of *Juniperus Sabina.*

Therapeutics.—Irritant and emmenagogue. The ointment is used as a stimulant to maintain a discharge from blistered surfaces.

Dose.—Tincture, 20 to 60 minims.

OLEUM TEREBINTHINÆ. $C_{10}H_{16}$.

Oil of Turpentine.

The oil distilled, usually by aid of steam, from the oleoresin (turpentine) obtained from *Pinus australis*, *Pinus Tæda*, and sometimes from *Pinus Pinaster* and *Pinus sylvestris*, rectified, if necessary.

Characters and Tests.—Limpid, colourless, with a strong peculiar odour, which varies in the different kinds, and a pungent and bitterish taste. It commences to boil at about 320° F., and almost entirely distils below 356° F., little or no residue remaining.

It is insoluble in water, soluble in ether, oils, and alcohol. By the action of hydrochloric acid gas it is converted into a solid crystalline camphor. Among the products of its oxidation is peroxide of hydrogen.

OFFICIAL PREPARATIONS.

Confectio Terebinthinæ.
Enema ,,
Linimentum ,,
Linimentum Terebinthinæ Aceticum.
Unguentum Terebinthinæ.

RESINA.

Resin.

The residue left after the distillation of the oil of turpentine from the crude oleo-resin (turpentine) of various species of *Pinus*.

Characters.—Translucent, yellowish, compact, brittle, pulverisable; fracture shining; odour and taste faintly terebinthinate. It is easily fusible, and burns with a dense yellow flame and much smoke. Chemically it is considered to be the anhydride of *abietic acid.*

Official Preparations.

Unguentum Resinæ. **Emplastrum Resinæ.**

Contained in :—

Charta Epispastica.
Emplastrum Calefaciens.
„ Cantharidis.
Emplastrum Picis.
„ Plumbi Iodidi.
„ Saponis.
Unguentum Terebinthinæ.

Therapeutics.—Oil of turpentine is a stimulant, antispasmodic, and diuretic; in large doses it is an anthelmintic and purgative; applied externally it is a powerful rubefacient, and thus used in the form of liniment in chest affections and chronically inflamed parts, or sprinkled on flannel as an application for inflammations in the abdomen. It is a valuable styptic in internal hæmorrhages. Resin preparations are used as local stimulants.

Dose.—Oil as a stimulant and antispasmodic, 10 to 30 minims; as an anthelmintic, 2 to 4 drachms; of the confection, 1 to 2 drachms.

OLEUM PINI SYLVESTRIS.

Fir-Wool Oil.

The oil distilled from the fresh leaves of *Pinus sylvestris*.

Characters and Tests.—Colourless, or nearly so, with an aromatic odour, and a pungent but not unpleasant flavour. Specific gravity not below 0·870. Soluble in about seven times its volume of rectified spirit.

Therapeutics.—Similar to turpentine. Used as a rubefacient in rheumatism. Inhaled it acts as an astringent and stimulant on inflamed mucous membrane, and is thus used in bronchitis, phthisis, and laryngitis.

Dose.—A teaspoonful in each pint of water at 140° F. for inhalation.

TEREBINTHINA CANADENSIS.

Canada Turpentine.

Also known as Canada Balsam.

The turpentine obtained by puncturing or incising the bark of the trunk and branches of *Pinus balsamea.*

Characters.—A pale-yellow and faintly greenish transparent oleo-resin, of the consistence of thin honey, with a peculiar, agreeable, terebinthinate odour, and a slightly bitter, feebly acrid taste; by exposure to the air drying very slowly into a transparent adhesive varnish, and solidifying when mixed with about a sixth of its weight of magnesia. Heated, it loses its volatile oil, leaving a residue of hard resin.

Contained in :—

Charta Epispastica.
Collodium Flexile.

Therapeutics and Use.—Stimulant and diuretic. Valuable for mounting microscopic specimens.

Dose.—10 to 30 grains.

PIX BURGUNDICA.

Burgundy Pitch.

The resinous exudation obtained from the stem of *Pinus Picea* melted and strained.

Characters and Test.—Hard and brittle, yet gradually taking the form of the vessel in which it is kept; somewhat opaque, dull reddish-brown or yellowish-brown, fracture clear and conchoidal. Odour agreeable and aromatic, especially when heated; taste sweet, aromatic, without bitterness. Readily soluble in glacial acetic acid.

It is stated that most of what is sold in this country is sophisticated from palm oil, resin, and water.

Contained in :—

Emplastrum Ferri. Emplastrum Picis.

PIX LIQUIDA.

Liquid Pitch or Wood Tar.

A bituminous liquid, obtained from the wood of *Pinus sylvestris*, and other species of *Pinus*, by destructive distillation.

Characters.—A dark-brown or blackish semi-liquid substance, of a well-known peculiar aromatic odour. Water agitated with it acquires a pale-brown colour, sharp empyreumatic taste, and acid reaction.

It is a complicated body, containing among other ingredients *toluol*, *cumol*, *naphthalin*, *anthracen*, *paraffin*, and *pyrocatechin*.

OFFICIAL PREPARATION.

Unguentum Picis Liquidæ.

Therapeutics.—Tar is a stimulant both externally and internally. It also has valuable antiseptic properties. The ointment is used in skin diseases, and tar itself in the form of pill or tar-water is beneficial in bronchitis.

Dose.—5 to 15 grains.

THUS AMERICANUM.

Common Frankincense.

The concrete turpentine which is scraped off the trunks of *Pinus australis* and *Pinus Tæda*.

Characters.—When fresh, it is a softish, yellow, opaque, tough solid, with the same odour as crude American turpentine, but by keeping it becomes dry and brittle, and darker in colour.

Contained in Emplastrum Picis.

CLASS III.—ACOTYLEDONS.

Sub-Class.—Acrogens.

N.O. FILICES.

Botanical name.	Part used.	Habitat.
ASPIDIUM FILIX-MAS.	Rhizome.	Indigenous.

FILIX MAS.

Male Fern.

The rhizome with the persistent bases of the petioles of *Aspidium Filix-mas.* Collected late in the autumn, divested of its scales, roots, and all dead portions, and carefully dried with a gentle heat. Should not be used if more than a year old.

Characters.—From 3 to 6 inches or more in length, and the rhizome itself from $\frac{3}{4}$ inch to 1 inch in diameter, but, being entirely covered by the hard, persistent, curved, angular, dark-brown bases of the petioles, is apparently 2 inches or more; brown externally, yellowish-white or brownish internally. Odour feeble, but disagreeable. It contains 6 per cent. of a green fatty oil, *filixolin.* This oil deposits on standing a crystalline body termed *filicic acid.*

OFFICIAL PREPARATION.

Extractum Filicis Liquidum.

Therapeutics.—Anthelmintic; used with much success for the treatment of tape-worm. It should be taken as an emulsion first thing in the morning fasting, and followed four hours afterwards by a dose of castor oil.

Dose.—Of liquid extract, $\frac{1}{2}$ to 1 drachm.

Sub Class.—Thallogens.

N.O. LICHENES.

Botanical name.	Part used.	Habitat.
CETRARIA ISLANDICA.	Thallus.	Iceland.

CETRARIA.

Iceland Moss.

The dried lichen *Cetraria islandica.*

Characters.—A foliaceous thallus, much branched in an irregular dichotomous manner into fringed lobes, harsh to the touch; colour greyish-white. A cold decoction gelatinises on cooling.

Contains a bitter principle called *cetraric acid*, also lichenin, a variety of starch.

OFFICIAL PREPARATION.

Decoctum Cetrariæ.

Therapeutics.—Mild tonic and demulcent.

Dose.—Decoction, 2 to 10 ounces.

FUNGI.

Botanical name.	Part used.	Habitat.
CLAVICEPS PURPUREA.	Sclerotium.	Spain and Russia.

ERGOTA.

Ergot.

The sclerotium of *Claviceps purpurea*, produced between the pales of, and gradually replacing the rye grain. Thus ergot is no part of the rye grain; the latter disappears entirely as the ergot develops.

Characters.—Subcylindrical or obscurely triangular, tapering towards the ends, generally arched or curved; from $\frac{1}{3}$ to $1\frac{1}{2}$ inch in length; longitudinally furrowed on each side, but more especially on that which is concave, and often irregularly cracked; violet-purple externally, whitish or pinkish-white within; fracture short. Odour peculiar and disagreeable, more especially if the powder be triturated with solution of potash.

Many substances have been claimed as the active principle of ergot, but none of them as yet have become generally recognised. Amongst its many constituents are *ecboline*, *ergotinine*, *sclerotic acid*, and *scleromucin;* a fixed oil is also present.

OFFICIAL PREPARATIONS.

Ergotinum.	**Infusum Ergotæ.**
Extractum Ergotæ Liquidum.	**Tinctura Ergotæ.**

ERGOTINUM.

Ergotin.

Purified extract of Ergot, commonly called Ergotin, Ergotine, or Bonjean's Ergotine. Take of liquid extract of ergot and rectified spirit 4 fluid ounces of each; evaporate the fluid extract by a water-bath to a syrupy consistence, and when cold mix with the spirit. Let it stand for half an hour, then filter, and evaporate the filtered liquid to the consistence of a soft extract.

OFFICIAL PREPARATION.

Injectio Ergotini Hypodermica.

Therapeutics.—Ecbolic and emmenagogue; also given to contract the small arteries. Employed in cases of difficult labour at childbirth; also useful in hæmorrhages, in the form of subcutaneous injection.

Doses.—Powder, 20 to 60 grains; extract, 10 to 60 minims; tincture, ½ to 2 drachms; infusion, 1 to 2 ounces; ergotin, 2 to 5 grains.

CEREVISIÆ FERMENTUM.

Beer Yeast.

The ferment obtained in brewing beer, and produced by *Saccharomyces cerevisiæ.*

Characters.—Viscid, semifluid, frothy, exhibiting under the microscope numerous isolated roundish or oval cells, or short branched filaments composed of united cells.

OFFICIAL PREPARATION.

Cataplasma Fermenti.

Use.—Has been given in typhoid fever, dysentery, and boils. The poultice is applied to sloughing sores.

ANIMAL KINGDOM.

CLASS.—ANELIDA.

Order.—Hirudinea.

Name.	Part used.	Habitat.
SANGUISUGA MEDICINALIS.	Whole animal.	France.
,, OFFICINALIS.	,, ,,	Hungary.

HIRUDO.

The Leech.

Of elongated form, 2 or 3 inches long, tapering at each end; each leech possesses both male and female organs, hence are called androgynous. The variety *medicinalis* has on its back six red bands; its belly is yellowish-green, with black spots. The variety called *officinalis* has a dark-green back, with six red stripes, olive green on the belly, but without spots.

Therapeutics.—Leeches are employed to abstract blood from various parts; the quantity of blood a leech will withdraw varies from 2 to 4 drachms. If hæmorrhage follows a leech bite, compression should be applied; if that fails, apply caustic. If a leech by accident is swallowed, give salt and water as an emetic.

CLASS.—INSECTA.

Order.—Hemiptera.

Name.	Part used.	Habitat.
Coccus Cacti.	Insect.	Mexico, Teneriffe.

COCCUS.

Cochineal.

The dried female insect *Coccus Cacti*, reared on *Opuntia cochinillifera*, and on other species of Opuntia.

Characters and Test.—About $\frac{1}{5}$ inch long; somewhat oval in outline, flat or concave beneath, convex above, transversely wrinkled, purplish-black or purplish-grey, easily reduced to powder, which is dark-red or puce-coloured. When macerated in water no insoluble powder is separated. Ignited with free access of air, not much more than 1 per cent. of ash remains. Both a black and a grey variety is found in commerce. Its colouring matter is called *carminic acid.*

Contained in :—

Tinctura Cardamomi Composita.
,, Cinchonæ Composita.
,, Cocci.

Use.—Employed as a colouring agent.

Order.—Hymenoptera.

Name.	Part used.	Habitat.
Apis mellifica.	Secretions.	Indigenous.

MEL.

Honey.

A saccharine secretion deposited in the honeycomb by the Hive Bee, *Apis mellifica.*

Characters and Tests.—When recently separated from the honeycomb, it is a viscid translucent liquid, of a light-yellowish or brown-yellow colour, which gradually becomes partially crystalline and opaque. It has a peculiar odour, and a very sweet characteristic taste. Boiled with water for five minutes and allowed to cool, it does not become blue with the solution of iodine, showing absence of starch. Incinerated it should not yield more than 0·2 per cent. ash, the solution of which, in water acidulated with nitric acid, should not afford more than a slight turbidity with solution of chloride of barium. This test shows absence of sulphates, which might have been introduced by adulterating honey with glucose. Honey consists mainly of *grape sugar*, with a little mannite and levulose.

Official Preparations.

Mel Depuratum. **Mel Boracis.** **Oxymel.**

Contained in :—

Confectio Piperis. Confectio Scammonii.
Confectio Terebinthinæ.

Therapeutics.—Emollient, nutrient, and laxative; often added to gargles and cough mixtures.

Dose.—Either of honey, oxymel, or strained honey, ½ to 2 drachms.

CERA FLAVA.

Yellow Wax.

Prepared from the honeycomb of the Hive Bee, *Apis mellifica.*

Characters and Tests.—Firm, breaking with a granular fracture, yellowish, having an agreeable honey-like odour. Not unctuous to the touch. Should be readily and entirely soluble in hot oil of turpentine. Should not yield more than 3 per cent. to cold rectified spirit, and nothing to water or to a boiling solution of soda, the two latter fluids after filtration neither being turbid nor yielding a precipitate on the addition of hydrochloric acid. Specific gravity 0·950 to 0·970. Melts at 146° F., when tested in the following manner. Liquefy a few grains, and draw a little of the fluid up into a capillary tube; fix a piece of the filled capillary tube to the bulb of a thermometer by thread; immerse the bulb and tube in a beaker of water, and heat the latter gently; at the moment the opaque rod of wax becomes transparent, note the temperature. The solidifying-point is two to three degrees lower than the melting-point. Boiling water, in which it has been agitated, is not, when cooled, rendered blue by iodine. The preceding tests show the absence of resin, stearin, hard paraffin, and starch.

The constituents of wax are *myricin*, *ceryl cerotate*, and *cerolein*.

CERA ALBA.

White Wax.

Yellow wax bleached by exposure to moisture, air, and light.

Characters and Tests.—Hard, nearly white, translucent. It should respond to the tests for yellow wax.

PREPARATIONS CONTAINING YELLOW WAX.

Emplastrum Calefaciens.
„ Cantharidis.
„ Galbani.
„ Picis.
„ Saponis Fuscum.
Pilula Phosphori.
Unguentum Cantharidis.
Unguentum Hydrargyri Compositum.
Picis Liquidæ.
„ Resinæ.
„ Sabinæ.
„ Terebinthinæ.

PREPARATIONS CONTAINING WHITE WAX.

Charta Epispastica.
Unguentum Cetacei.
Unguentum Simplex.

Use.—To give consistency to other preparations.

Order.—Coleoptera.

Name.	Part used.	Habitat.
CANTHARIS VESICATORIA.	Insect.	Hungary.

CANTHARIS.

Cantharides.

Spanish flies are from $\frac{3}{4}$ to $1\frac{1}{2}$ inch in length, of a glossy-green or bluish hue. The wing cases have two slightly raised lines, and enclose two thin membranous wings. The active principle of the insect is a fatty acid, called *cantharidin*, which can be obtained by exhausting the flies with acetic ether. On evaporating the ether the cantharidin separates in crystals.

OFFICIAL PREPARATIONS.

Acetum Cantharidis.	**Emplastrum Cantharidis.**
Charta Epispastica.	**Tinctura** ,,
Emplastrum Calefaciens.	**Unguentum** ,,

Liquor Epispasticus.

Therapeutics.—Rubefacient, vesicant, and irritant; chiefly used for its blistering property. Taken internally it is a diuretic and aphrodisiac.

Dose.—Tincture, 5 to 20 minims.

CLASS.—PISCES.

Order.—Sturiones.

ICHTHYOCOLLA.

Isinglass.

This is placed in the appendix of the British Pharmacopœia, and consists of the swimming bladder of various species of the sturgeon (*Acipenser*). A solution is used to distinguish gallic from tannic acids. With the latter it gives a precipitate.

Order.—Teleosteæ.

Name.	Part used.	Habitat.
GADUS MORRHUA.	Oil.	Newfoundland Coast.

OLEUM MORRHUÆ.

Oleum Jecoris Aselli.

Cod liver oil is extracted from the fresh liver of the cod by the application of a gentle heat. The livers are sliced, and placed in earthen vessels at about 150° F., and not exceeding 180°. Soon the oil separates, and the livers shrivel up; the oil is now filtered and cooled, to allow of the separation of the margarin, and again filtered. Fresh and well-made cod liver oil is almost colourless, having a slight fishy odour, and a bland fishlike taste, without acridity; by keeping it darkens, the odour increases, and becomes unpleasant. Its principal constituents are *olein*, *margarin*, *iodine*, and *bromine*.

The British Pharmacopœia provides the following test:—A drop of strong sulphuric acid added to a few drops of the oil develops a violet colour, soon passing to a brown.

Therapeutics.—Highly esteemed as a flesh restorer and blood improver. Children under its influence increase much in weight. Given in phthisis, scrofula, and general chest affections.

Dose.—1 to 4 drachms, gradually increasing. To cover the unpleasant taste it may be taken with milk, orange wine, or a pinch of salt.

CLASS.—AVES.

Order.—Gallinæ.

Name.	Part used.	Habitat.
GALLUS BANKIVA.	Ovum.	Indigenous.

ALBUMEN OVI.

White of Egg.

A solution is official, and used to detect metaphosphoric acid in the ordinary phosphoric acid, giving a precipitate with the former, but not with the latter.

VITELLUS OVI.

Yolk of Egg.

This is official as an ingredient of the Mistura Spiritus Vini Gallici.

CLASS.—MAMMALIA.

Order.—Cetacea.

Name.	Part used.	Habitat.
PHYSETER MACROCEPHALUS.	Cetine.	Pacific.

CETACEUM.

Spermaceti.

A crystalline fatlike substance, obtained from the head of the sperm whale. The head of the sperm whale yields sperm oil; this on cooling, deposits the spermaceti, which is separated by pressure.

Characters and Tests.—Crystalline, pearly-white, glistening, translucent, with little taste or odour, reducible to powder by the addition of a little rectified spirit. It is insoluble in water, but soluble in ether, chloroform, or boiling rectified spirit. Scarcely unctuous to the touch. Melting-point 111° to 122° F. when tested by the method described in connection with yellow wax. Spermaceti is not a fat or glyceride, but a solid alcohol called *cetyl palmitate.*

Contained in :—

Unguentum Cetacei. Charta Epispastica.

Therapeutics.—The ointment is used as an emollient.

Order.—Pachydermata.

Name.	Part used.	Habitat.
SUS SCROFA.	Fat and Pepsin.	Indigenous.

ADEPS PRÆPARATUS.

Prepared Lard.

The purified fat of the hog, *Sus scrofa.*

Take of the internal fat of the abdomen of the hog, perfectly fresh, any convenient quantity. Remove as much of the external membranes as possible, and suspend the fat so that it shall be freely exposed to the air for some hours; then cut it into small pieces, and beat these in a stone mortar until they are thus, or by some equivalent process, reduced to a uniform mass in which the membranous vesicles are completely broken. Put the mass thus produced into a vessel surrounded by warm water, and apply a temperature not exceeding 130° F., until the fat has melted and separated from the membranous matter. Finally, strain the melted fat through flannel.

In chemical composition lard is a mixture of olein palmitin and stearin.

Characters and Tests.—A soft white fatty substance, melting at about 100° F. Has no rancid odour; dissolves entirely in ether. Distilled water, in which it has been boiled, when cooled and filtered, gives no precipitate with nitrate of silver (absence of salt), and is not rendered blue by the addition of solution of iodine (absence of starch).

Contained in :—

Adeps Benzoatus.
Emplastrum Cantharidis.
Unguentum Iodi.
,, Terebinthinæ.
Unguentum Hydrargyri Nitratis.

ADEPS BENZOATUS.

Benzoated Lard.

Take of prepared lard, 1 pound or 50 parts; benzoin, reduced to coarse powder, 140 grains or 1 part. Melt the lard by the heat of a water-bath, add the benzoin, and, frequently stirring them together, continue the application of heat for two hours; finally, remove the residual benzoin by straining. This treatment prevents the lard going rancid.

Contained in :—

Unguentum Aconitinæ.
,, Atropinæ.
,, Belladonnæ.
,, Calaminæ.
,, Chrysarobini.
,, Gallæ.
,, Hydrargyri Subchloridi.
Unguentum Iodoformi.
,, Plumbi Acetatis.
,, Potassii Iodidi.
,, Sabinæ.
,, Simplex.
,, Staphisagriæ.
,, Sulphuris.
,, Zinci.

Therapeutics.—Used as an emollient, and ointment base.

PEPSIN.

Pepsin.

The digestive principle of gastric juice, made either from the stomachs of pigs, sheep, or calves. The stomachs are washed clean with a little water, laid on a flat surface, and scraped with a blunt knife. The viscid pulp obtained is dried on a porcelain surface at 100° F., finally powdered.

Characters and Tests.—A light yellowish-brown powder, having a faint, but not disagreeable odour, and a slightly saline taste, without any indication of putrescence. Very little soluble in water or spirit. Two grains of it with an ounce of distilled water, to which 5 minims of hydrochloric acid have been added, form a mixture in which at least 100 grains of hard-boiled white of egg, passed through wire gauze of 36 meshes per linear inch and made of No. 32 brass or copper wire, will dissolve on their being well mixed, digested, and well stirred together for thirty minutes at a temperature of 130° F.

Therapeutics.—Given in many diseases to assist digestion; the proteid foods are frequently peptonised outside the body by means of pepsin and an acid, then administered.

Dose.—2 to 10 grains.

Order.—Ruminantia.

Name.	Part used.	Habitat.
Bos Taurus.	Milk and Gall.	Indigenous.
Moschus moschiferus.	Secretion.	China.
Ovis Aries.	Fat.	Indigenous.

LAC.

Milk.

Cows' milk is a natural emulsion of fat, with some sugar, casein, and a small quantity of chlorides and phosphates. Milk of fair quality should yield on evaporation 12 per cent. of dry residue, from which ether should extract 3 per cent. of fat. Milk is used in making scammony mixture.

Therapeutics.—Demulcent; highly valued as a nutritious article of diet.

SACCHARUM LACTIS.

Sugar of Milk or Lactose.

Obtained from the whey of milk by evaporation. It occurs in cylindrical crystalline masses, of a dull yellowish colour. In the centre of each piece is usually found a cord or stick acting as a nucleus for the crystals. Its taste is slightly sweet, and it feels gritty in the mouth. Milk sugar does not undergo the ordinary alcoholic fermentation.

Uses.—A useful diluent of active powders, also a nutrient; sometimes added to the food of children. Forms an ingredient of Pulvis Elaterini Co.

Dose.—*Ad libitum.*

FEL BOVINUM PURIFICATUM.

Purified Ox Bile.

Made by adding fresh ox gall to twice its volume of rectified spirit, shaking, and setting aside for twelve hours; the clear solution is decanted and evaporated to an extract. It forms a dark-greenish substance, composed chiefly of *glycocholate* and *taurocholate of sodium*, *cholesterin* and green colouring matter. Ox gall mixed with a little sugar and water, and sulphuric acid added till the precipitate is dissolved, gives a red colour, passing to purple and violet. This is a test for cholic acid.

Therapeutics.—Slight laxative; given in dyspepsia and biliary disorders.

Dose.—5 to 10 grains in pill.

MOSCHUS.

Musk.

A dried secretion, obtained from the preputial follicles of the Musk Deer. It is imported in the form of a pod or sac, oval and hairy; the interior of the sac contains a granular mass, which is the musk. The colour of musk is almost black, and its odour very powerful; its constituents are volatile oil, ammonia, stearin, and cholesterin.

Therapeutics.—Stimulant and antispasmodic, given in hysteria; chiefly employed as an ingredient of perfumes.

Dose.—5 to 10 grains.

SEVUM PRÆPARATUM.

Prepared Suet.

The internal fat of the abdomen of the sheep (*Ovis Aries*), purified by melting and straining. It consists mainly of stearin, and soon becomes rancid.

Contained in :—

Emplastrum Cantharidis. Unguentum Hydrargyri.

OFFICIAL PREPARATION.

Sapo Animalis.

Sapo Animalis or Curd Soap is a stearate of sodium, made by uniting soda with animal fat.

DEFINITION OF THERAPEUTIC ACTIONS.

ACIDS.

These, as a therapeutic group, act in the concentrated state as caustics. When diluted, they have the power of checking the acid secretions of the parts with which they come in contact; they also increase the alkaline secretion, and thus, according to Dr. Ringer, act beneficially in acid dyspepsia and sweating. The following are the chief examples: Nitric, Hydrochloric, Sulphuric, Phosphoric, Acetic, Lactic, Nitro-hydrochloric, Citric, and Tartaric Acids.

ANTACIDS.

These comprise the Alkaline Hydrates, Citrates, Tartrates, Carbonates, and Acetates. They are said to have the power of checking alkaline, and stimulating acid secretions.

ALTERATIVES.

A class of remedies whose action is not well understood. They all produce some alteration in the state of the blood, and modify the mode of action of the functional tissues. The chief alteratives are: Mercury and its salts, Iodine and the iodides, Arsenic, and Antimony.

ANAPHRODISIACS.

Remedies weakening the sexual functions. Of these may be mentioned: Tobacco, Camphor, and the Bromides.

ANÆSTHETICS.

Drugs which on inhalation destroy consciousness, causing insensibility to pain; they are also soporifics and anodynes, but should be carefully distinguished from opium and chloral. The chief are: Chloroform, Ether, Nitrous Oxide Gas.

Of local anæsthetics there are Cocaine Hydrochlorate, Aconitine, Veratrine, Ether Spray, and Ice.

ANODYNES AND NARCOTICS.

Remedies which, by acting on the nervous system, alleviate pain, hence are called anodyne; others produce sleep, and are called soporifics. The anodynes and soporifics are Opium, Morphine, Chloral, Butyl Chloral, Indian Hemp, Bromides, Lettuce. The following are anodyne only: Belladonna, Henbane, Stramonium, Conium, Aconite, Gelsemium.

ANTHELMINTICS.

Medicines which kill or expel worms. They are divided into *Vermicides*, which kill the worm but do not expel it; and *Vermifuges*, which expel the worm usually by a purgative action.

Vermicides.—Male Fern, Kousso, Kamala, Santonin, Oil of Turpentine, Pomegranate Root Bark.

Vermifuges.—Scammony, Jalap, Calomel, Gamboge.

ANTIPERIODICS.

Medicines which possess the power of arresting intermittent forms of disease, such as ague. Cinchona Bark and its alkaloids, Arsenic, Sulphate of Beberine, and Salicin are examples.

ANTISEPTICS.

Bodies having the power to prevent putrefaction. They may act in two ways: 1. Chemical; 2. Physical. The chief chemical disinfectants are Permanganate of Potassium, Chlorine, Chlorinated Lime, Sulphurous Acid, and Perchloride of Mercury.

The following are said to act physically, and chiefly by coagulating albumen: Carbolic Acid, Creasote, Alcohol, and Heat.

Most essential oils are weak antiseptics, yielding slowly a vapour which produces Peroxide of Hydrogen.

ANTIPYRETICS.

Remedies which reduce the temperature of the body in fevers. Quinine, Salicylic Acid, Salicylate of Sodium, Aconite, Veratria, Digitalis, and Alcohol, are examples.

ANTISPASMODICS.

Drugs which have the power of allaying spasm. They form several groups.

1. Those which paralyse the motor centres, as Physostigma.

2. Those which produce general depression, as Lobelia, Aconite, Tobacco.

3. Those which stimulate the bowels, causing expulsion of gas. These are commonly called carminatives, and include all the essential oils, aromatic drugs, Asafœtida, Valerian, and Ammonia.

APHRODISIACS.

Drugs which excite the sexual functions, as Cantharides, Nux Vomica, Phosphorus, and Indian Hemp.

ASTRINGENTS.

Agents causing contraction of blood vessels and hardening of gelatine and albuminous matter. The mineral astringents are the Perchlorides of Mercury and Iron, Alum, Zinc, Copper, Lead Salts, and the mineral acids. The vegetable astringents are Logwood, Catechu, Kino, Rhatany, Tannic and Gallic Acids.

CATHARTICS. APERIENTS. PURGATIVES.

Medicines which evacuate, or increase the action of, the bowels. They are divided as follows :—

Laxatives.—These cause softened motions. Examples are the Fig, Sulphur, Manna, Olive Oil.

Simple Purgatives.—Rhubarb, Senna, Aloes, Jalap, Calomel, Castor Oil.

Drastic Purgatives.—Colocynth, Croton Oil, Gamboge, Scammony, Podophyllin. They cause almost fluid motions.

Hydragogue Purgatives.—These cause fluid or watery motions, removing much serum from the blood. Examples are Gamboge, Elaterium, Croton Oil, and Cream of Tartar in large doses.

Cholagogue Purgatives.—These probably act by emptying the gall bladder and bile ducts, so causing an increased flow of bile into the intestines. The chief are, Calomel, Blue Pill, Aloes, Podophyllin.

COUNTER-IRRITANTS.

Remedies causing redness of the skin, irritating the parts to which they are applied. Their beneficial effect is believed to be due to nervous agencies. Turpentine, Mustard, Ammonia, Croton Oil, Cantharides, Capsicum.

DEMULCENTS.

Substances which are of an oily or mucilaginous character, protecting or allaying irritation of the parts they are brought in contact with : Mucilages of Acacia and Tragacanth, Milk, Barley Water, Starch, Almond and Olive Oils.

DIAPHORETICS.

Drugs which cause perspiration by increasing the secretion from the skin : Jaborandi, Spirits of Nitrous Ether, Tartarated Antimony, Ipecacuanha.

DIURETICS.

Medicines which increase the secretions from the kidneys, as Acetate, Citrate, and Tartrate of Potassium, Juniper, Squills, Turpentine, Copaiba, Buchu.

ECBOLICS.

Medicines causing contraction of the muscular fibre of the uterus: Ergot, Borax, Savin.

EMMENAGOGUES.

Remedies which are believed to increase or restore the menstrual flow: Ergot, Iron, Aloes, Nux Vomica.

ESCHAROTICS OR CAUSTICS.

Applications causing destruction of the parts to which they are applied. Caustic Potash and Soda, Nitrate of Silver, Chloride of Zinc, Nitric Acid, and Nitrate of Mercury are examples.

EXPECTORANTS.

Drugs which increase or modify the secretion of the mucous membrane of the bronchial passages, thus assisting the expulsion of mucus: Carbonate of Ammonium, Squills, Senega, Liquorice, Benzoic Acid and Benzoates, Balsams of Peru, Tolu, and Benzoin, Copaiba, Ipecacuanha; the vapours of Hot Water, Creasote, and Carbolic Acid.

HÆMATINICS.

Medicines which enrich the blood, increasing the number and size of the blood corpuscles: Iron and Manganese Salts.

HYPNOTICS, SOPORIFICS.

Remedies which cause sleep by their action on the brain: Chloral and the Bromides.

MYDRIATICS.

Drugs which cause dilatation of the pupil, as Belladonna, Hyoscyamus, and Stramonium.

MYOSITICS.

Drugs that induce contraction of the pupil, as Physostigmine and Opium.

NARCOTICS.

Medicines which produce sleep by acting on the cerebrum: Opium, Morphine, Indian Hemp, Alcohols, and Ethers.

REFRIGERANTS.

Preparations which allay thirst, or reduce the temperature of the body: Citrate, Nitrate, Bicarbonate, and Acid-Tartrate of Potassium; Dilute Mineral Acids.

SIALAGOGUES.

Remedies which increase the flow of saliva: Jaborandi, Pellitory, Capsicum.

STERNUTATORIES.

Substances which, when drawn into the nose, irritate the mucous membrane, causing sneezing.

STOMACHICS.

Remedies which act directly upon the stomach, improving appetite and assisting digestion: Cinchona Bark and its alkaloids, Nux Vomica and Strychnine, Calumba, Gentian, Quassia, Hops, Aloes, Rhubarb, Nitric and Hydrochloric Acids.

STYPTICS.

Drugs which have the power to stop bleeding. They usually act by coagulating the blood and constringing the vessels: Perchloride of Iron, Tannic Acid, Carbolic Acid, Alum, and Matico, are amongst the chief.

TONICS.

Medicines which improve the tone or powers of the part on which they act, as the stomach or digestive organs. When they promote increase in the strength and weight of the body, they may be said to be general tonics. All the vegetable bitters, including Quinine, Iron salts, and dilute Mineral Acids, come under this head, likewise Cod Liver Oil.

VESICANTS.

Substances which, when applied to the skin, raise a blister: Cantharides, Turpentine, Mustard, Croton Oil.

SECTION II.

PHARMACY.

PHARMACY.

SHORT DEFINITIONS OF PHARMACEUTICAL PROCESSES.

Trituration.—An operation of division, usually carried on by means of the pestle and mortar.

Levigation.—Similar to trituration, the difference being that a liquid is introduced to aid the division of the solid. A muller and slab were the ancient instruments used for levigating colours to prepare paints.

Elutriation.—A process of division, depending upon the different velocities with which solid particles fall through a fluid to the bottom of a vessel. The upper part of the deposit, being finest, is poured off, and on standing deposits the elutriated powder. Prepared chalk and calamine are treated this way.

Granulation.—A process of division, performed by stirring briskly while hot concentrated solutions of salts are cooling. Or a hot solution of a salt may be poured into alcohol, the alcohol separating the salt in a granular form, as in granulated sulphate of iron.

Precipitation.—A process of conversion from a liquid to a solid state; occasionally liquid precipitates are formed.

Percolation.—The passage of a fluid through a solid, the fluid displacing by its solvent agency a portion of the solid.

Filtration.—The separation of soluble from insoluble matter. The portion which passes through the filter is the filtrate.

Evaporation.—The conversion of a body into a gas or vapour so as to lessen its volume; it is also called vaporisation.

Ebullition.—The process of boiling; bubbles of vapour being produced by the agency of heat.

Fusion.—The passage, by the agency of heat, of a solid to the liquid state.

Distillation.—The production of a vapour by heat, and its condensation by cold or pressure.

Fractional Distillation.—The separation of mixtures of bodies by means of different temperatures.

Destructive Distillation.—The heating of substances in partly closed vessels, whereby they are destroyed; the resulting vapours, being condensed, form new products.

Sublimation.—Sublimation is the same as distillation, only that the vapours condense in the solid state.

Rectification.—A process of repeated distillation, the distillate becoming stronger and purer at each operation.

Dialysis.—A method of separating crystalloids from colloids. The process depends upon the unequal rates at which substances pass through a membrane, such as parchment. Crystals in solution pass most rapidly, colloids remain on the dialyser. That which passes through is called the dialysate.

Digestion.—A process of maceration for a specified time, at a special temperature.

Infusion.—The maceration of a drug in water, at any temperature below actual boiling.

Decoction.—The boiling of a drug with water. The process is not suited to drugs containing aromatic principles.

OFFICIAL GROUPS OF PHARMACEUTICAL PREPARATIONS.

Definitions of these groups are given under each head, and points worth impressing on the memory brought under notice.

ACETA.

Vinegars (2).

Preparations in which acetic acid is employed as a solvent.

ACETUM SCILLÆ.

Vinegar of Squill.

Take of

Squill, bruised . . .	2½ ounces or 1 part.
Diluted Acetic Acid . .	1 pint or 8 fluid parts.

Macerate the squill in the acetic acid for seven days, then strain with expression, and filter. Specific gravity about 1·038.

ACETUM CANTHARIDIS.

Vinegar of Cantharides.

Take of

Cantharides, bruised .	2 ounces or 1 part.
Glacial Acetic Acid .	2 fl. ounces or 1 fl. part.
Acetic Acid, sufficient for	20 fl. ounces or 10 fl. parts.

Mix thirteen fluid ounces of the acetic acid with the glacial acetic acid, and digest the cantharides in this mixture for two hours at a temperature of 200° F.; then transfer the ingredients, after they have cooled, to a percolator, and when the liquid ceases to pass, pour five fluid ounces of acetic acid over the residuum in the apparatus. As soon as the percolation is complete, subject the contents of the percolator to pressure, filter the product, mix the liquids, and add sufficient acetic acid to make one pint. Specific gravity about 1·060.

AQUÆ.

Waters (16).

Watery solutions of aromatic and other substances; thirteen are solutions of essential oils in water, the three exceptions being chloroform, ordinary and distilled water.

Three methods are followed for making waters:—

1. The drug, such as the fruits or flowers, is distilled with water.
2. The oil or other substance is dissolved in water.
3. An essential oil is distilled with water.

Aromatic waters do not keep well, hence they are frequently extemporised by rubbing a few drops of an essential oil with magnesia and water, then filtering. The product, however, is not so good as the water made by distillation.

The general dose of aromatic waters is ½ to 2 ounces; an important exception is *Aqua Laurocerasi;* dose, ½ to 2 drachms.

AQUA.

Water.

Natural water, the purest that can be obtained, cleared, if necessary, by filtration; free from odour, unusual taste, and visible impurity. To be used whenever "Water" is ordered in the British Pharmacopœia. In dispensing prescriptions, *aqua* should be understood to mean distilled water.

AQUA ANISI.

Anise Water.

Take of

Anise Fruit, bruised	1 pound.
Water	2 gallons.

Distil 1 gallon.

AQUA ANETHI.

Dill Water.

Take of

Dill Fruit, bruised	1 pound.
Water	2 gallons.

Distil 1 gallon.

AQUA AURANTII FLORIS.

Orange Flower Water.

The distilled water of the flowers of *Citrus vulgaris*, and of *Citrus Aurantium*, imported from France.

The orange flower water of commerce is said to be three times the strength of that employed in former years.

AQUA CAMPHORÆ.

Camphor Water.

Take of

Camphor, crushed	½ ounce.
Distilled Water	1 gallon.

Enclose the camphor in a muslin bag, and attach this to a piece of glass, by means of which it may be kept at the bottom of a bottle containing the distilled water. Close the mouth of the bottle, macerate for at least two days, and then pour off the solution when it is required.

Preparations Containing Camphor Water.

Injectio Apomorphinæ Hypodermica.
„ Ergotini Hypodermica.
Liquor Atropinæ Sulphatis.

AQUA CARUI.

Caraway Water.

Take of

Caraway Fruit, bruised	1 pound.
Water	2 gallons.

Distil 1 gallon.

AQUA CHLOROFORMI.

Chloroform Water.

Take of

Chloroform	1 fluid drachm.
Distilled Water	25 fluid ounces.

Put them into a two-pint stoppered bottle, and shake them together until the chloroform is entirely dissolved tin he water.

AQUA CINNAMOMI.

Cinnamon Water.

Take of

Cinnamon Bark, bruised	20 ounces.
Water	2 gallons.

Distil 1 gallon.

Preparations Containing Cinnamon Water.

Mistura Cretæ.
Mistura Guaiaci.
Mistura Spiritus Vini Gallici.

AQUA DESTILLATA. H_2O.

Distilled Water.

Take of

Water	10 gallons.

Distil from a copper still, connected with a block-tin worm; reject the first half-gallon, and preserve the next eight gallons.

Tests.—A fluid ounce of it evaporated in a clean glass capsule leaves scarcely a visible residue. It is not affected by sulphuretted hydrogen, oxalate of ammonium, nitrate of silver, chloride of barium, solution of lime, or a mixture of starch mucilage and iodide of potassium. It gives only a faint yellow coloration when a solution of potassio-mercuric iodide is added to three or four ounces. This last, known as Nessler's test, shows that the water contains but a mere trace of ammonia.

AQUA FŒNICULI.

Fennel Water.

Take of

Fennel Fruit, bruised	1 pound.
Water	2 gallons.

Distil 1 gallon.

AQUA LAUROCERASI.

Cherry-Laurel Water.

Take of

Fresh leaves of Cherry-Laurel	1 pound.
Water	$2\frac{1}{2}$ pints.

Chop the leaves, crush them in a mortar, introduce them with the water into a retort, and distil one pint of liquid. Shake the product, filter through paper, and adjust the strength of the finished product either by addition of hydrocyanic acid or by diluting the distillate with distilled water, so that 810 grains of it, tested as described in the process for diluted hydrocyanic acid, shall require 150 grain-measures of the volumetric solution of nitrate of silver to be added, before a permanent precipitate begins to form.

This process yields a product containing $\frac{1}{10}$ per cent. of hydrocyanic acid.

AQUA MENTHÆ PIPERITÆ.

Peppermint Water.

Take of

Oil of Peppermint	1½ fluid drachm.
Water	1½ gallon.

Distil 1 gallon.

AQUA MENTHÆ VIRIDIS.

Spearmint Water.

Take of

Oil of Spearmint	1½ fluid drachm.
Water	1½ gallon.

Distil 1 gallon.

AQUA PIMENTÆ.

Pimento Water.

Take of

Pimento, bruised	14 ounces.
Water	2 gallons.

Distil 1 gallon.

AQUA ROSÆ.

Rose Water.

Take of

Fresh petals of the Hundred-leaved Rose (or an equivalent quantity of the petals preserved while fresh with common salt)	10 pounds.
Water	5 gallons.

Distil 1 gallon.

AQUA SAMBUCI.

Elder-flower Water.

Take of

Fresh Elder Flowers, separated from the stalks (or an equivalent quantity of the flowers preserved while fresh with common salt)	10 pounds.
Water	5 gallons.

Distil 1 gallon.

ACIDA.

Acids. Dilute Acids (9).

Acids diluted for the convenience of apportioning the dose, and increasing the accuracy of measurement of doses.

ACIDUM ACETICUM DILUTUM.

Diluted Acetic Acid.

Take of

Acetic Acid . . .	1 pint or 1 fluid part.
Distilled Water . .	7 pints or 7 fluid parts.

Mix.

ACIDUM HYDROBROMICUM DILUTUM.

Diluted Hydrobromic Acid.

Anaqueous solution, containing 10 per cent. by weight of gaseous or real hydrobromic acid, HBr. For process of manufacture see page 15.

ACIDUM HYDROCHLORICUM DILUTUM.

Diluted Hydrochloric Acid.

Take of

Hydrochloric Acid . . .	8 fluid ounces.
Distilled Water . . .	a sufficiency.

Dilute the acid with 16 ounces of the water, then add more water, so that at a temperature of 60° F. it shall measure 26½ fluid ounces.

ACIDUM HYDROCYANICUM DILUTUM.

Diluted Hydrocyanic Acid.

Hydrocyanic acid, HCN, dissolved in water, and constituting 2 per cent. by weight of the solution. For process of manufacture see page 17.

Diluted hydrocyanic acid, being very volatile, should be kept in well-corked bottles, tied over with impervious tissue.

The bottles should be inverted when not in use, and kept in a dark place.

ACIDUM LACTICUM DILUTUM.

Diluted Lactic Acid.

Take of

Lactic Acid	8 fluid ounces.
Distilled Water	sufficient to produce 1 pint.

Mix.

ACIDUM NITRICUM DILUTUM.

Diluted Nitric Acid.

Take of

Nitric Acid	6 fluid ounces.
Distilled Water	a sufficiency.

Dilute the acid with 24 fluid ounces of the water, then add more water, so that at a temperature of 60° F. it shall measure 31 fluid ounces.

ACIDUM NITRO-HYDROCHLORICUM DILUTUM.

Diluted Nitro-Hydrochloric Acid.

Contains free chlorine, hydrochloric, nitric, and nitrous acids, and other compounds, dissolved in water.

Take of

Nitric Acid	3	fluid ounces.
Hydrochloric Acid	4	"
Distilled Water	25	"

Add the acids to the water, and keep the mixture in a glass-stoppered bottle for fourteen days before it is used.

ACIDUM PHOSPHORICUM DILUTUM.

Diluted Phosphoric Acid.

Phosphoric acid, H_3PO_4, in solution in water to the extent of 13·8 per cent. by weight, corresponding to 10 per cent. of phosphoric anhydride, P_2O_5.

Take of

Concentrated Phosphoric Acid	3 fluid ounces.
Distilled Water	a sufficiency to form 20 fluid ounces.

Mix.

Diluted phosphoric acid may be prepared from a concentrated acid of any strength other than that described, provided the product have a specific gravity of 1·08, and respond to the other characters and tests for phosphoric acid.

ACIDUM SULPHURICUM DILUTUM.

Diluted Sulphuric Acid.

Take of

Sulphuric Acid	7 fluid ounces.
Distilled Water	a sufficiency.

Dilute the acid with 77 fluid ounces of the water, and when the mixture has cooled to 60° F. add more water, so that it shall measure 83½ fluid ounces. Set the mixture aside and decant from any sediment. If any sediment falls it indicates the presence of lead. It is important in mixing this acid that the acid be slowly poured into the water, otherwise much heat is developed, and a dangerous accident may result from sudden breakage of glass.

ACIDUM SULPHURICUM AROMATICUM.

Aromatic Sulphuric Acid.

Take of

Strong Tincture of Ginger	2 fl. ozs. or 1 fl. part.
Spirit of Cinnamon	2 fl. ozs. or 1 fl. part.
Rectified Spirit	36 fl. ozs. or 18 fl. parts.
Sulphuric Acid	3 fl. ozs. or 2419 grs. or 1½ fl. part.

Mix the sulphuric acid gradually with the spirit, and add the spirit of cinnamon and tincture of ginger.

CATAPLASMATA.

Poultices (6).

Local applications of a pasty consistence, generally applied warm. Linseed meal is the basis of all, except yeast poultice.

CATAPLASMA CARBONIS.

Charcoal Poultice.

Take of

Wood Charcoal, in powder .	½ ounce or 1 part.
Crumb of Bread . . .	2 ounces or 4 parts.
Linseed Meal . . .	1½ ounce or 3 parts.
Boiling Water . . .	10 fl. ounces or 20 fl. parts.

Macerate the bread in the water for ten minutes near the fire, then mix, and add the linseed meal gradually, stirring the ingredients, that a soft poultice may be formed. Mix with this half the charcoal, and sprinkle the remainder on the surface of the poultice.

CATAPLASMA CONII.

Hemlock Poultice.

Take of

Juice of Hemlock . .	1 fl. ounce or 1 fl. part.
Linseed Meal . .	4 ounces or 4 parts.
Boiling Water . .	10 fl. ounces or 10 fl. parts.

Evaporate the hemlock juice to half its volume, add this to the linseed meal and water previously mixed, and stir them together.

CATAPLASMA FERMENTI.

Yeast Poultice.

Take of

Beer Yeast . . .	6 fl. ounces or 3 fl. parts.
Wheaten Flour . .	14 ounces or 7 parts.
Water, heated to 100° F. .	6 fl. ounces or 3 fl. parts.

Mix the yeast with the water, and stir in the flour. Place the mass near the fire till it rises.

CATAPLASMA LINI.

Linseed Poultice.

Take of

Linseed Meal . . .	4 ounces or 2 parts.
Boiling Water . . .	10 fl. ounces or 5 fl. parts.

Mix the linseed meal gradually with the water, with constant stirring.

CATAPLASMA SINAPIS.

Mustard Poultice.

Take of

Mustard, in powder . .	2½ ounces or a sufficiency.
Linseed Meal . . .	2½ ounces.
Boiling Water Water } . .	of each a sufficiency.

Mix the mustard with 2 to 3 ounces of lukewarm water; mix the linseed meal with 6 to 8 ounces of boiling water; add the former to the latter, and stir them together.

CATAPLASMA SODÆ CHLORINATÆ.

Chlorine Poultice.

Take of

Solution of Chlorinated Soda	2 fl. ounces or 1 fl. part.
Linseed Meal . . .	4 ounces or 2 parts.
Boiling Water . . .	8 fl. ounces or 4 fl. parts.

Mix the linseed meal gradually with the water, and add the solution of chlorinated soda, with constant stirring.

CHARTÆ.

Papers (2).

Local applications for producing rubefaction or vesication.

CHARTA EPISPASTICA.

Blistering Paper.

Take of

White Wax . . .	4 ounces or 16 parts.
Spermaceti . . .	1½ ounce or 6 parts.
Olive Oil . . .	2 fluid ounces or 8 fluid parts.
Resin . . .	¾ ounce or 3 parts.
Canada Balsam . .	¼ ounce or 1 part.
Cantharides, in powder	1 ounce or 4 parts.
Distilled Water . .	6 fluid ounces or 24 fluid parts.

Digest all the ingredients, excepting the Canada balsam, in a water-bath for two hours, stirring them constantly; then strain, and separate the plaster from the watery liquid. Mix the Canada balsam with the plaster melted in a shallow vessel, and pass strips of paper over the surface of the hot liquid, so that one side of the paper shall receive a thin coating of plaster.

It may be convenient to employ paper ruled, so as to indicate divisions, each of which is 1 square inch.

CHARTA SINAPIS.

Mustard Paper.

Take of

Mustard in powder . .	1 ounce.
Solution of Gutta Percha .	2 fluid ounces, or a sufficiency.

Mix, and spread upon cartridge paper; then allow it to dry.

COLLODIA.

Collodions (3).

Solutions of guncotton, designed in two cases to form protective coatings when applied to inflamed or injured parts of the body. The third collodion is a blistering agent.

COLLODIUM.

Collodion.

Take of

Pyroxylin	1 ounce or 1 part.
Ether	36 fluid ounces or 36 fluid parts.
Rectified Spirit	12 fluid ounces or 12 fluid parts.

Mix the ether and the spirit, and add the pyroxylin. Set aside for a few days, and, should there be any sediment, decant the clear solution. Keep it in a well-corked bottle.

COLLODIUM FLEXILE.

Flexible Collodion.

Take of

Collodion	12 fluid ounces or 48 fluid parts.
Canada Balsam	½ ounce or 2 parts.
Castor Oil	¼ ounce or 1 part.

Mix, and keep in a well-corked bottle.

COLLODIUM VESICANS.

Blistering Collodion.

Take of

Blistering Liquid	20 fluid ounces or 20 fluid parts.
Pyroxylin	1 ounce or 1 part.

Add the pyroxylin to the liquid in a stoppered bottle, and shake them together until the former is dissolved.

CONFECTIONES.

Confections (8).

Preparations having a honey-like consistence. Most of them contain active remedies disguised with flavouring agents. The two confections of rose are mainly used as pill excipients.

CONFECTIO OPII.

Confection of Opium.

Take of

Compound Powder of Opium .	100 grains or 1 part.
Syrup	300 grains or 3 parts.

Mix.

CONFECTIO PIPERIS.

Confection of Pepper.

Take of

Black Pepper, in fine powder .	2 ounces or 2 parts.
Caraway Fruit, in fine powder .	3 ounces or 3 parts.
Clarified Honey . . .	15 ounces or 15 parts.

Rub them well together in a mortar.

CONFECTIO ROSÆ CANINÆ.

Confection of Hips.

Take of

Hips deprived of their seedlike fruits	1 pound or 1 part.
Refined Sugar	2 pounds or 2 parts.

Beat the hips to a pulp in a stone mortar, and rub the pulp through a sieve, then add the sugar, and rub them well together.

CONFECTIO ROSÆ GALLICÆ.

Confection of Roses.

Take of

Fresh Red-Rose Petals	1 pound or 1 part.
Refined Sugar	3 pounds or 3 parts.

Beat the petals to a pulp in a stone mortar, add the sugar, and rub them well together.

Enters as an excipient into:—

Pilula Aloes Barbadensis.
,, ,, et Asafœtidæ.
,, ,, et Ferri.
Pilula Aloes Socotrinæ.
,, Ferri Carbonatis.
,, Hydrargyri.
Pilula Plumbi cum Opio.

CONFECTIO SCAMMONII.

Confection of Scammony.

Take of

Resin of Scammony, in powder	6 ounces or 48 parts.
Ginger, in fine powder	3 ounces or 24 parts.
Oil of Caraway	$\frac{1}{4}$ fl. ounce or 2 fl. parts.
Oil of Cloves	$\frac{1}{8}$ fl. ounce or 1 fl. part.
Syrup	6 fl. ounces or 48 fl. parts.
Clarified Honey	3 ounces or 24 parts.

Rub the powders with the syrup and the honey into a uniform mass, then add the oils, and mix.

CONFECTIO SENNÆ.

Confection of Senna.

Take of

Senna, in fine powder	7 ounces.
Coriander Fruit, in fine powder	3 ounces.
Figs	12 ounces
Tamarind	9 ounces.
Cassia Pulp	9 ounces.
Prunes	6 ounces.
Extract of Liquorice	1 ounce.
Refined Sugar	30 ounces.
Distilled Water, a sufficiency to make	75 ounces.

Boil the figs and prunes gently with twenty-four ounces of distilled water in a covered vessel for four hours, then, having added more distilled water to make up the quantity to its original volume, mix the tamarind and cassia pulp, digest for two hours, and rub the softened pulp of the fruits through a hair sieve, rejecting the seeds and other hard parts. To the pulped product add the sugar and extract of liquorice, and dissolve them with the aid of a little heat; while the mixture is still warm, add to it gradually the mixed senna and coriander powders, and mix the whole thoroughly, making the weight of the resulting confection seventy-five ounces either by evaporation or by the addition of more distilled water.

CONFECTIO SULPHURIS.

Confection of Sulphur.

Take of

Sublimed Sulphur . .	4 ounces or 4 parts.
Acid Tartrate of Potassium, in powder . .	1 ounce or 1 part.
Syrup of Orange Peel .	4 fl. ounces or 4 fl. parts.
Tragacanth, in powder .	18 grains or $\frac{1}{24}$ part.

Rub them well together.

CONFECTIO TEREBINTHINÆ.

Confection of Turpentine.

Take of

Oil of Turpentine . .	1 fl. ounce or 1 fl. part.
Liquorice Root, in powder .	1 ounce or 1 part.
Clarified Honey . . .	2 ounces or 2 parts.

Rub the oil of turpentine with the liquorice, add the honey, and mix to a uniform consistence.

DECOCTA.

Decoctions (13).

Fluids obtained by boiling drugs with water. The process of decoction is not suited to drugs containing aromatic principles, as aromatic principles would be dissipated by boiling.

The general dose of decoctions is from ½ to 2 ounces, but those of cetraria, sarsaparilla, and barley 2 to 10 ounces.

In decoction of logwood the cinnamon is added towards the end of the boiling, so as to avoid loss of essential oil.

DECOCTUM ALOES COMPOSITUM.

Compound Decoction of Aloes.

Take of

Extract of Socotrine Aloes	½ ounce.
Myrrh	of each ¼ ounce.
Saffron	
Carbonate of Potassium	
Extract of Liquorice	2 ounces.
Compound Tincture of Cardamoms	15 fluid ounces.
Distilled Water	a sufficiency to make 50 fluid ounces.

Reduce the extract of aloes and the myrrh to coarse powder, and put them together with the carbonate of potassium and extract of liquorice into a suitable covered vessel with a pint of distilled water; boil gently for five minutes, then add the saffron. Let the vessel with its contents cool, then add the tincture of cardamoms, and, covering the vessel closely, allow the ingredients to macerate for two hours; finally, strain through flannel, pouring as much distilled water over the contents of the strainer as will make the strained product measure fifty fluid ounces.

This preparation should be kept in vessels from which air is excluded as far as possible, otherwise the aloes quickly loses its purgative power.

DECOCTUM CETRARIÆ.

Decoction of Iceland Moss.

Take of

Iceland Moss	1 ounce.
Distilled Water	1 pint.

Wash the moss in cold water to remove impurities; boil it with the distilled water for ten minutes in a covered vessel, and strain, with gentle pressure, while hot; then pour distilled water over the contents of the strainer until the strained product measures a pint.

DECOCTUM CINCHONÆ.

Decoction of Cinchona.

Take of

Red Cinchona Bark, in No. 20 powder	1¼ ounce.
Distilled Water	1 pint.

Boil for ten minutes in a covered vessel. Strain the decoction, when cold, and pour as much distilled water over the contents of the strainer as will make the strained product measure one pint.

DECOCTUM GRANATI RADICIS.

Decoction of Pomegranate Root.

Take of

Pomegranate Root Bark, sliced	2 ounces.
Distilled Water	2 pints.

Boil down to a pint, and strain, making the strained product up to a pint, if necessary, by pouring distilled water over the contents of the strainer.

DECOCTUM HÆMATOXYLI.

Decoction of Logwood.

Take of

Logwood in chips	1 ounce.
Cinnamon Bark, bruised	55 grains.
Distilled Water	1 pint.

Boil the logwood in the water for ten minutes in a covered vessel, adding the cinnamon towards the end. Strain the decoction, and pour as much distilled water over the contents of the strainer as will make the strained product measure a pint.

DECOCTUM HORDEI.

Decoction of Barley.

Take of

Pearl Barley	2 ounces.
Distilled Water	1½ pint.

Wash the barley in cold water, and reject the washings; boil the washed barley with the distilled water for twenty minutes in a covered vessel, and strain. Product, about one pint.

DECOCTUM PAPAVERIS.

Decoction of Poppy.

Take of

Poppy Capsules, bruised	2 ounces.
Distilled Water	1½ pint.

Boil for ten minutes in a covered vessel, then strain, and pour as much distilled water over the contents of the strainer as will make the strained product measure a pint.

DECOCTUM PAREIRÆ.

Decoction of Pareira.

Take of

Pareira Root, in No. 20 powder	1¼ ounce.
Distilled Water	1 pint.

Boil for fifteen minutes in a covered vessel, then strain, and pour as much distilled water over the contents of the strainer as will make the strained product measure a pint.

DECOCTUM QUERCUS.

Decoction of Oak Bark.

Take of

Oak Bark, bruised . . .	1¼ ounce.
Distilled Water	1 pint.

Boil for ten minutes in a covered vessel, then strain, and pour as much distilled water over the contents of the strainer as will make the strained product measure a pint.

DECOCTUM SARSÆ.

Decoction of Sarsaparilla.

Take of

Jamaica Sarsaparilla, cut transversely .	2½ ounces.
Boiling Distilled Water	1½ pint.

Digest the sarsaparilla in the water for an hour, then boil for ten minutes in a covered vessel, cool and strain, pouring distilled water, if required, over the contents of the strainer, or otherwise making the strained product measure a pint.

DECOCTUM SARSÆ COMPOSITUM.

Compound Decoction of Sarsaparilla.

Take of

Jamaica Sarsaparilla, cut transversely .	2½ ounces.
Sassafras Root, in chips .	of each ¼ ounce.
Guaiacum Wood turnings .	
Dried Liquorice Root, bruised	
Mezereon Bark	⅛ ounce.
Boiling Distilled Water . . .	1½ pint.

Digest the solid ingredients in the water for an hour, then boil for ten minutes in a covered vessel; cool and strain, pouring distilled water, if required, over the contents of the strainer, or otherwise making the strained product measure a pint.

DECOCTUM SCOPARII.

Decoction of Broom.

Take of

Broom Tops, dried	1 ounce.
Distilled Water	1 pint.

Boil for ten minutes in a covered vessel, then strain, and pour as much distilled water over the contents of the strainer as will make the strained product measure a pint.

DECOCTUM TARAXACI.

Decoction of Dandelion.

Take of

Dried Dandelion Root, sliced and bruised	1 ounce.
Distilled Water	1 pint.

Boil for ten minutes in a covered vessel, then strain, and pour as much distilled water over the contents of the strainer as will make the strained product measure a pint.

EMPLASTRA.

Plasters (14).

Tenacious products designed for spreading on linen, calico, or leather, and adhering at the temperature of the body. They serve various purposes. Some are anodyne, as belladonna, or opium; others are stimulating, or blistering, as cantharides. Soap, resin, and lead plasters are used to afford mechanical support in cases of injury, and weak limbs; also to keep cuts or wounds well together.

EMPLASTRUM AMMONIACI CUM HYDRARGYRO.

Ammoniacum and Mercury Plaster.

Take of

Ammoniacum . . .	12 ounces or 656 parts.
Mercury	3 ounces or 164 parts.
Olive Oil	56 grains or 7 parts.
Sublimed Sulphur . .	8 grains or 1 part.

Heat the oil, and add the sulphur to it gradually, stirring till they unite. With this mixture triturate the mercury, until globules are no longer visible; and, lastly, add the ammoniacum, previously liquefied, mixing the whole carefully.

EMPLASTRUM BELLADONNÆ.

Belladonna Plaster.

Take of

Alcoholic Extract of Belladonna .	4 ounces or 1 part.
Resin Plaster . . .	of each 8 ounces or 2 parts.
Soap Plaster . . .	

Melt the plasters by the heat of a water-bath, then add the extract, and mix the whole thoroughly together.

EMPLASTRUM CALEFACIENS.

Warming Plaster.

Synonym.—WARM PLASTER.

Take of

Cantharides, in coarse powder	of each 4 ounces or 1 part.
Expressed Oil of Nutmeg .	
Yellow Wax . . .	
Resin	
Resin Plaster . . .	3¼ pounds or 13 parts.
Soap Plaster . . .	2 pounds or 8 parts.
Boiling Water . . .	1 pint or 5 fluid parts.

Infuse the cantharides in the boiling water for six hours;

squeeze strongly through calico, and evaporate the expressed liquid by a water-bath till reduced to one-third. Then add the other ingredients, and melt in a water-bath, stirring well until the whole is thoroughly mixed.

EMPLASTRUM CANTHARIDIS.

Cantharides Plaster.

Take of

Cantharides, in powder	12 ounces or 4 parts
Yellow Wax	of each.
Prepared Suet	7½ ounces or 2½ parts.
Prepared Lard	6 ounces or 2 parts.
Resin	8 ounces or 1 part.

Liquefy the wax, suet, and lard together by a water-bath, and add the resin, previously melted; then introduce the cantharides, mix the whole thoroughly, and continue to stir the mixture while it is allowed to cool.

EMPLASTRUM FERRI.

Chalybeate Plaster.

Take of

Peroxide of Iron, in fine powder	1 ounce or 1 part.
Burgundy Pitch	2 ounces or 2 parts.
Lead Plaster	8 ounces or 8 parts.

Add the peroxide of iron to the Burgundy pitch and lead plaster, previously melted together, and stir the mixture constantly till it stiffens on cooling.

EMPLASTRUM GALBANI.

Galbanum Plaster.

Take of

Galbanum	
Ammoniacum	of each 1 ounce or 1 part.
Yellow Wax	
Lead Plaster	8 ounces or 8 parts.

Melt the galbanum and ammoniacum together, and strain then add the mixture to the lead plaster and wax, also previously melted together, and mix the whole thoroughly.

EMPLASTRUM HYDRARGYRI.

Mercurial Plaster.

Take of

Mercury	3 ounces or 164 parts.
Olive Oil	56 grains or 7 parts.
Sublimed Sulphur	8 grains or 1 part.
Lead Plaster	6 ounces or 328 parts.

Heat the oil and add the sulphur to it gradually, stirring until they unite; with this mixture triturate the mercury until globules are no longer visible; then add the lead plaster, previously liquefied, and mix the whole thoroughly.

EMPLASTRUM OPII.

Opium Plaster.

Take of

Opium, in the finest powder	1 ounce or 1 part.
Resin Plaster	9 ounces or 9 parts.

Melt the resin plaster by means of a water-bath; then add the opium by degrees, and mix thoroughly.

EMPLASTRUM PICIS.

Pitch Plaster.

Take of

Burgundy Pitch	26 ounces or 26 parts.
Common Frankincense	13 ounces or 13 parts.
Resin	of each 4½ ounces or 4½ parts.
Yellow Wax	
Expressed Oil of Nutmeg	1 ounce or 1 part.
Olive Oil	of each 2 fl. ounces or 2 fl. parts.
Water	

Add the oils and the water to the frankincense, Burgundy pitch, resin, and wax, previously melted together; then, constantly stirring, evaporate to a proper consistence.

EMPLASTRUM PLUMBI.

Lead Plaster.

Take of

Oxide of Lead, in fine powder	5 pounds or 5 parts.
Olive Oil	10 pounds or 10 parts.
Water	5 pounds or 5 parts.

Boil all the ingredients together gently by the heat of a steam-bath, and keep them simmering for four or five hours, stirring constantly until the product acquires a proper consistence for a plaster, and adding more water during the process, if necessary.

PREPARATIONS CONTAINING LEAD PLASTER.

Emplastrum Ferri.
„ **Galbani.**
„ **Hydrargyri.**
Emplastrum Plumbi Iodidi.
„ **Resinæ.**
„ **Saponis.**

EMPLASTRUM PLUMBI IODIDI.

Iodide of Lead Plaster.

Take of

Iodide of Lead . . .	2 ounces or 1 part.
Lead Plaster	1 pound or 8 parts.
Resin	2 ounces or 1 part.

Add the iodide of lead in fine powder to the plaster and resin previously melted at as low a temperature as possible, and mix them intimately.

EMPLASTRUM RESINÆ.

Resin Plaster.

Synonym.—ADHESIVE PLASTER.

Take of

Resin	4 ounces or 2 parts.
Lead Plaster	2 pounds or 16 parts.
Curd Soap	2 ounces or 1 part.

To the lead plaster, previously melted at a low temperature, add the resin and soap, first liquefied, and stir them until they are thoroughly mixed.

PREPARATIONS CONTAINING RESIN PLASTER.

Emplastrum Belladonnæ. Emplastrum Calefaciens.
Emplastrum Opii.

EMPLASTRUM SAPONIS.

Soap Plaster.

Take of

Curd Soap	6 ounces or 2 parts.
Lead Plaster	2¼ pounds or 36 parts.
Resin	1 ounce or 1 part.

To the lead plaster, melted at a low temperature, add the soap and the resin, first liquefied; then, constantly stirring, evaporate to a proper consistence.

PREPARATION CONTAINING SOAP PLASTER.

Emplastrum Calefaciens.

EMPLASTRUM SAPONIS FUSCUM.

Brown Soap Plaster.

Synonym.—EMPLASTRUM CERATI SAPONIS.

Take of

Curd Soap, in powder	10 ounces or 10 parts.
Yellow Wax	12½ ounces or 12½ parts.
Olive Oil	1 pint or 20 fluid parts.
Oxide of Lead	15 ounces or 15 parts.
Vinegar	1 gallon or 160 fluid parts.

Boil the vinegar and oxide of lead together, by the heat of a steam-bath, constantly stirring them until the oxide has combined with the acid; then add the soap and boil again until most of the moisture is evaporated; finally, add the wax and oil melted together, and stir the whole continuously, maintaining the heat until, by the evaporation of the remaining moisture, the product has acquired the proper consistence for a plaster.

ESSENTIÆ.

Essences (2).

These are spirituous solutions of essential oils, one volume of oil being contained in five volumes of the essence.

ESSENTIA ANISI.

Essence of Anise.

Take of

Oil of Anise . .	1 fluid ounce or 1 fluid part.
Rectified Spirit .	4 fluid ounces or 4 fluid parts.

Mix.

ESSENTIA MENTHÆ PIPERITÆ.

Essence of Peppermint.

Take of

Oil of Peppermint .	1 fluid ounce or 1 fluid part.
Rectified Spirit .	4 fluid ounces or 4 fluid parts.

Mix.

ENEMATA.

Enemas (5).

Preparations for Injecting into the Rectum.

ENEMA ALOES.

Enema of Aloes.

Take of

Aloes	40 grains.
Carbonate of Potassium . .	15 grains.
Mucilage of Starch . . .	10 fluid ounces.

Mix and rub together.

ENEMA ASAFŒTIDÆ.

Enema of Asafœtida.

Take of

Asafœtida	30 grains.
Distilled Water . . .	4 fluid ounces.

Rub the asafœtida in a mortar with the water added gradually, so as to form an emulsion.

ENEMA MAGNESII SULPHATIS.

Enema of Sulphate of Magnesium.

Take of

Sulphate of Magnesium . .	1 ounce.
Olive Oil	1 fluid ounce.
Mucilage of Starch . .	15 fluid ounces.

Dissolve the sulphate of magnesium in the mucilage of starch, add the oil, and mix.

ENEMA OPII.

Enema of Opium.

Take of

Tincture of Opium . . .	½ fluid drachm.
Mucilage of Starch . . .	2 fluid ounces.

Mix.

ENEMA TEREBINTHINÆ.

Enema of Turpentine.

Take of

Oil of Turpentine	1 fluid ounce.
Mucilage of Starch . . .	15 fluid ounces.

Mix.

EXTRACTA.

Extracts (47).

These are composed of the soluble matters of plants extracted, in most cases, by solvents. They may be classed as follows:—

Green or Chlorophyll Extracts.
Fresh Juice ,,
Alcoholic ,,
Hydro-Alcoholic Extracts.
Aqueous ,,
Ethereal ,,
Liquid Extracts.

Green or Chlorophyll Extracts.

EXTRACTUM ACONITI.

Extract of Aconite.

EXTRACTUM BELLADONNÆ.

Extract of Belladonna.

EXTRACTUM CONII.

Extract of Hemlock.

EXTRACTUM HYOSCYAMI.

Extract of Henbane.

EXTRACTUM LACTUCÆ.

Extract of Lettuce.

All the above are made by the following process, using the fresh plants:—

Bruise in a stone mortar and press out the juice; heat it gradually to 130° F., and separate the green colouring matter by a calico filter. Heat the strained liquor to 200° F. to coagulate the albumen, and again filter. Evaporate the filtrate by a water-bath to the consistence of a thin syrup; then add to it the green colouring matter previously separated and passed through a hair sieve, stirring the whole assiduously; continue the evaporation at a temperature not exceeding 140° F., until the extract is of a suitable consistence for forming pills.

The object of this process is to get rid of the vegetable albumen, which, if allowed to remain in the extract, would cause it to become mouldy and lose strength.

Extracts of Fresh Juices.

EXTRACTUM COLCHICI.

Extract of Colchicum.

Take of

Fresh Colchicum Corms, deprived of their coats	7 pounds.

EXTRACTUM COLCHICI ACETICUM.

Acetic Extract of Colchicum.

Take of

Fresh Colchicum Corms, deprived of their coats	7 pounds.
Acetic Acid	6 fluid ounces.

EXTRACTUM TARAXACI.

Extract of Dandelion.

Take of

Fresh Dandelion Root	4 pounds.

The root or corm of either of the above is crushed, and the juice expressed; in the acetic extract acetic acid is added. The feculence having subsided, the clear liquor is heated to 212° F., then strained through flannel, and evaporated by a water bath, at a temperature not exceeding 160° F., to a soft consistence.

The temperature of 212° F. coagulates the albumen, as there is no chlorophyll in either of the above juices, there is no instruction to heat to 130° F. and separate it.

Alcoholic Extracts (semi-solid.)

Rectified spirit is the solvent used in these extracts; it is selected for various reasons. In the cases of Indian hemp and gelsemium, because resins have to be dissolved. In Calabar bean for the reason that a watery extract is found to undergo rapid decomposition. In belladonna because a resinous extract mingles readily with lead plaster or lard; hence is well suited for the preparation of belladonna ointment and plaster.

EXTRACTUM BELLADONNÆ ALCOHOLICUM.

Alcoholic Extract of Belladonna.

Take of

Belladonna Root, in No. 20 powder .	1 pound.
Rectified Spirit	of each a sufficiency.
Distilled Water	

EXTRACTUM GELSEMII ALCOHOLICUM.

Alcoholic Extract of Gelsemium.

Take of

Gelsemium, in No. 60 powder . .	1 pound.
Rectified Spirit	of each a sufficiency.
Distilled Water	

The above two extracts are made by a parallel process of maceration, percolation, and displacement, as follows:—

Mix the drug with two pints of the spirit and macerate in a closed vessel for forty-eight hours; then transfer to a percolator, and when the fluid ceases to pass, continue the percolation with water until two pints of liquid have been collected. Evaporate the percolated liquid by a water-bath until the extract has acquired a suitable consistence.

EXTRACTUM CANNABIS INDICÆ.

Extract of Indian Hemp.

Take of

Indian Hemp, in coarse powder . .	1 pound.
Rectified Spirit	4 pints.

Macerate the hemp in the spirit for seven days, and press out the tincture. Distil off the greater part of the spirit, and evaporate what remains by a water-bath to the consistence of a soft extract.

This extract is employed for the preparation of tincture of Indian hemp.

EXTRACTUM PHYSOSTIGMATIS.

Extract of Calabar Bean.

Take of

Calabar Bean, in No. 40 powder . .	1 pound.
Rectified Spirit	4 pints.

Macerate the bean for forty-eight hours with one pint of the spirit in a closed vessel, agitating occasionally; then transfer to a percolator, and, when the fluid ceases to pass, add the remainder of the spirit so that it may slowly percolate through the powder. Subject the residue of the bean to pressure, adding the expressed liquor to the product of the percolation; filter, distil off most of the spirit, and evaporate what is left in the retort by a water-bath to the consistence of a soft extract.

In the above extract the process is maceration, percolation, and pressure; displacement cannot well be applied, as the albuminous matters of the bean resist the passage of water.

The extract is employed to make physostigmine.

Hydro-Alcoholic Extracts.

Extracts in which water and spirit separately, or a mixture of the two, is employed as the solvent.

EXTRACTUM CASCARÆ SAGRADÆ.

Extract of Cascara Sagrada.

Synonym.—EXTRACTUM RHAMNI PURSHIANI.

Take of

Cascara Sagrada, in No. 40 powder .	1 pound.
Proof Spirit	of each a sufficiency.
Distilled Water	

EXTRACTUM JABORANDI.

Extract of Jaborandi.

Take of

Jaborandi, in No. 40 powder	1 pound.
Proof Spirit	of each a sufficiency.
Distilled Water	

EXTRACTUM RHAMNI FRANGULÆ.

Extract of Rhamnus Frangula.

Synonym.—EXTRACTUM FRANGULÆ.

Take of

Rhamnus Frangula Bark, in No. 40 powder	1 pound.
Proof Spirit	of each a sufficiency.
Water	

The process for making the above three is quite similar and as follows :—

Mix the powdered drug with two pints of the spirit, and macerate in a closed vessel for forty-eight hours; then transfer to a percolator, and when the fluid ceases to pass, continue the percolation with water until three pints of liquid have been collected, or the drug is exhausted. Evaporate the percolated liquor by a water-bath until the extract has acquired a suitable consistence.

Extract of rhubarb is made in nearly the same way, differing only as to quantity of spirit used.

EXTRACTUM RHEI.

Extract of Rhubarb.

Take of

Rhubarb Root, in No. 40 powder	1 pound.
Proof Spirit	3 pints.
Distilled Water	a sufficiency.

Mix the rhubarb with three pints of the spirit, and macerate in a closed vessel for forty-eight hours; then transfer to a percolator, and when the fluid ceases to pass, continue the percolation with water until five pints of liquor have been collected, or the rhubarb is exhausted. Evaporate the percolated liquor by a water-bath until the extract has acquired a suitable consistence for forming pills.

EXTRACTUM CALUMBÆ.

Extract of Calumba.

Take of

Calumba Root, cut small	1 pound.
Proof Spirit	4 pints.

Macerate the calumba with two pints of the proof spirit for twelve hours, strain and press. Macerate again with the same quantity of proof spirit, strain and press as before. Mix and filter the liquors, recover the spirit by distillation, and evaporate the residue by the heat of a water-bath until the extract is of a suitable consistence for forming pills.

In the above process there is no displacement, as sliced calumba is too coarse to admit of it.

EXTRACTUM JALAPÆ.

Extract of Jalap.

Take of

Jalap, in coarse powder	1 pound.
Rectified Spirit	4 pints.
Distilled Water	1 gallon.

EXTRACTUM LUPULI.

Extract of Hop.

Take of

Hop	1 pound.
Rectified Spirit	1½ pint.
Distilled Water	1 gallon.

The hop or jalap is macerated in the spirit for seven days, the spirit is pressed out, filtered, and distilled off, leaving a soft extract.

The pressed residue in the case of jalap is macerated in the water for four hours, in the case of hop boiled in the water for one hour, strained and evaporated to an extract. The watery and spirituous extracts are now mixed and evaporated at 140° F., to a suitable consistence.

EXTRACTUM COLOCYNTHIDIS COMPOSITUM.

Compound Extract of Colocynth

Take of

Colocynth Pulp	6 ounces.
Extract of Socotrine Aloes . . .	12 ounces.
Resin of Scammony	4 ounces.
Curd Soap, in powder	3 ounces.
Cardamom Seeds, in the finest powder .	1 ounce.
Proof Spirit	1 gallon.

Macerate the colocynth in the spirit for four days; press out the tincture and distil off the spirit; then add the aloes, scammony, and soap, and evaporate by a water-bath, adding the cardamoms towards the end of the process.

EXTRACTUM NUCIS VOMICÆ.

Extract of Nux Vomica.

Take of

Nux Vomica, in powder . .	1 pound.
Rectified Spirit	64 fluid ounces.
Distilled Water	16 fluid ounces.

Exhaust the powdered nux vomica, with the mixture of spirit and water, by maceration and percolation.

Take of this liquid one fluid ounce, and estimate the amount of total alkaloid in the following way :—Evaporate almost to dryness over a water-bath, dissolve the residue in two fluid drachms of chloroform and half a fluid ounce of dilute sulphuric acid, with an equal bulk of water; agitate and warm gently. When the liquors have separated, draw off the chloroform, and add to the acid liquor excess of solution of ammonia and half a fluid ounce of chloroform; well agitate, gently warm, and, after the liquors have completely separated, transfer the chloroform to a weighed dish, evaporate over a water-bath, and dry for one hour at 212° F. Allow the residue of total alkaloid to cool, and then weigh.

Take of the percolated liquid as much as contains 131¼ grains of total alkaloid, distil off the spirit, and evaporate over a water-bath until the extract weighs two ounces. This extract will contain 15 per cent. of total alkaloid.*

Test.—Ten grains of the extract when treated in the following manner should yield one grain and a half of total alkaloid. Dissolve the extract in half a fluid ounce of water, heating gently if necessary, and add a drachm of carbonate of sodium previously dissolved in half a fluid ounce of water and half a fluid ounce of chloroform; agitate, warm gently, and separate the chloroform. Add to this half a fluid ounce of dilute sulphuric acid with an equal bulk of water; again agitate, warm, and separate the acid liquor from the chloroform. To this acid liquor add now an excess of ammonia, and agitate with half a fluid ounce of chloroform; when the liquors have separated, transfer the chloroform to a weighed dish, and evaporate the chloroform over a water-bath. Dry the residue for one hour and weigh.

The extract is used in making tincture of nux vomica.

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* This process was elaborated by Professor Dunstan and F. W. Short, and provides nux vomica preparations of uniform, instead of uncertain, strengths.

EXTRACTUM STRAMONII.

Extract of Stramonium.

Take of

Stramonium Seeds, in No. 40 powder	1 pound.
Ether	1 pint, or a sufficiency.
Distilled Water Proof Spirit	of each a sufficiency.

Shake the ether in a bottle with half a pint of the water, and after separation decant the ether. Pack the stramonium in a percolator, and free it from its oil by passing the washed ether slowly through it. Having removed and rejected the ethereal solution, pour the spirit over the residue of the stramonium in the percolator, and allow it to pass through slowly until the powder is exhausted. Distil off most of the spirit from the tincture, and evaporate the residue by a water-bath until the extract has acquired a suitable consistence for forming pills.

In the above the water is used to wash the ether and free it from impurity.

The washed ether next removes the fixed oil from the seeds, enabling the proof spirit to exhaust them.

Aqueous Extracts.

Extracts in which water is employed as the solvent. Water is selected in these cases, because it is both an economical and good solvent.

EXTRACTUM ALOES BARBADENSIS.

Extract of Barbadoes Aloes.

Take of

Barbadoes Aloes, in small fragments	1 pound.
Boiling Distilled Water	1 gallon.

EXTRACTUM ALOES SOCOTRINÆ.

Extract of Socotrine Aloes.

Take of

Socotrine Aloes, in small fragments	1 pound.
Boiling Distilled Water	1 gallon.

Both the above are made by the following process:—

Add the aloes to the water, and stir well until they are thoroughly mixed. Set aside for twelve hours; then pour off the clear liquid, strain the remainder, and evaporate the mixed liquors by a current of warm air to dryness.

A current of warm air is employed so as to avoid the injurious influence of a high temperature on the aloes.

The remainder of the watery extracts do not admit of further classification, each having a special process.

EXTRACTUM ANTHEMIDIS.

Extract of Chamomile.

Take of

Chamomile Flowers	1 pound.
Oil of Chamomile	15 minims.
Distilled Water	1 gallon.

Boil the chamomile flowers with the water until the volume is reduced to one half, then strain, press, and filter. Evaporate the liquor by a water-bath, until the extract is of a suitable consistence for forming pills, adding the oil of chamomile at the end of the process.

Most of the natural essential oil is lost during evaporation, so more is added as compensation at the end of the process.

EXTRACTUM GENTIANÆ.

Extract of Gentian.

Take of

Gentian Root, sliced	1 pound.
Boiling Distilled Water	1 gallon.

Infuse the gentian in the water for two hours; boil for fifteen minutes; pour off, press, and strain. Then evaporate the liquor by a water-bath, until the extract is of a suitable consistence for forming pills.

EXTRACTUM GLYCYRRHIZÆ.

Extract of Liquorice.

Take of

Liquorice Root, in No. 20 powder . .	1 pound.
Distilled Water	4 pints.

Macerate the liquorice root with two pints of the water for twelve hours, strain and press; again macerate the pressed marc with the remainder of the water for six hours, strain and press. Mix the strained liquors, heat them to 212° F., and strain through flannel; then evaporate by a water-bath, until the extract is of a suitable consistence for forming pills.

This process is similar to that for making the extracts of colchicum and taraxacum, differing only by the root being dry and exhausted with water.

EXTRACTUM HÆMATOXYLI.

Extract of Logwood.

Take of

Logwood, in fine chips	1 pound.
Boiling Distilled Water	1 gallon.

Infuse the logwood in the water for twenty-four hours, then boil down to one-half, strain, and evaporate to dryness by a water-bath, stirring with a wooden spatula. Iron vessels should not be used, as they turn the product black by forming tannate of iron.

EXTRACTUM KRAMERIÆ.

Extract of Rhatany.

Take of

Rhatany Root, in No. 40 powder	1 pound.
Distilled Water	a sufficiency.

Macerate the rhatany in a pint and a half of the water for twenty-four hours; then pack in a percolator, and add more distilled water, until twelve pints have been collected, or the rhatany is exhausted. Evaporate the liquor by a water-bath to dryness.

EXTRACTUM OPII.

Extract of Opium.

Take of

Opium, in powder*	1 pound.
Distilled Water	6 pints.

Macerate the opium in two pints of the water for twenty-four hours, and express the liquor. Thoroughly mix the residue of the opium with two pints of water, macerate again for twenty-four hours, and express. Repeat the operation a third time. Mix the liquors, strain through flannel, and evaporate by a water-bath, until the product weighs half a pound, being a yield of 50 per cent. on the dried opium.

Test.—Analysed as described under "Opium," this extract should yield about 20 per cent. of morphine.

EXTRACTUM PAPAVERIS.

Extract of Poppy.

Take of

Poppy Capsules, freed from the seeds, and in No. 20 powder	1 pound.
Rectified Spirit	2 ounces.
Boiling Distilled Water	a sufficiency.

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* Umney states this should read "Opium" instead of "Opium in powder," as crude opium will yield 50 per cent. of extract. The B. P. in its corrections admits of this being done.

Mix the poppy capsules with two pints of the water, and infuse for twenty-four hours, stirring frequently; then pack in a percolator, and, adding more of the water, allow the liquor slowly to pass, until about a gallon has been collected, or until the residue is exhausted. Evaporate the liquor by a water-bath until it is reduced to a pint, and, when cold, add the spirit. Let the mixture stand for twenty-four hours, then separate the clear liquor by filtration, and evaporate this by a water-bath until the extract has acquired a suitable consistence for forming pills.

EXTRACTUM PAREIRÆ.

Extract of Pareira.

Take of

Pareira Root, in No. 40 powder . .	1 pound.
Boiling Distilled Water . . .	a sufficiency.

Digest the pareira root with a pint of the water for twenty-four hours, then pack in a percolator, and, adding more of the water, allow the liquor slowly to pass, until about a gallon has been collected, or the pareira is exhausted. Evaporate the liquor by a water-bath, until the extract has acquired a suitable consistence for forming pills.

EXTRACTUM QUASSIÆ.

Extract of Quassia.

Take of

Quassia Wood, rasped	1 pound.
Distilled Water	a sufficiency.

Macerate the quassia with eight fluid ounces of the water for twelve hours; then pack in a percolator, and, adding more of the water, allow the liquor slowly to pass, until the quassia is exhausted. Evaporate the liquor; filter before it becomes too thick; and again evaporate by a water-bath until the extract is of a suitable consistence for forming pills.

Ethereal Extract.

EXTRACTUM MEZEREI ÆTHEREUM.

Ethereal Extract of Mezereon.

This is an ethereal extract made from an alcoholic extract.

Take of

Mezereon Bark, cut small	1 pound.
Rectified Spirit	8 pints.
Ether	1 pint.

Macerate the mezereon in six pints of the spirit for three days, with frequent agitation; strain and press. To the residue of the mezereon add the remainder of the spirit, and again macerate for three days, with frequent agitation; strain and press. Mix and filter the strained liquors; recover the greater part of the spirit by distillation, evaporate what remains to the consistence of a soft extract; put this into a stoppered bottle with the ether, and macerate for twenty-four hours, shaking them frequently. Decant the ethereal solution; recover part of the ether by distillation, and evaporate what remains to the consistence of a soft extract.

Another ethereal extract is made from Male Fern; it is considered amongst the liquid extracts.

Liquid Extracts.

These are of fluid consistence, and always dispensed by measure. They all contain spirit as a preservative, with the exception of extract of male fern. No uniform classification of processes can be arranged.

The following are made by exhaustion of the drug with water, adding spirit towards the end of the process:—

Ergot, Opium, Rhamnus, Cascara, Liquorice, and Bael.

Pareira is made by dissolving the solid extract of pareira in a mixture of spirit and water. Proof spirit followed by water is the solvent for Sarsaparilla and Taraxacum. Proof spirit alone for Coca, and rectified spirit for Cimicifuga, whereas Cinchona is exhausted with a mixture of glycerine, hydrochloric acid, and water.

EXTRACTUM BELÆ LIQUIDUM.

Liquid Extract of Bael.

Take of

Bael Fruit	1 pound.
Distilled Water	12 pints.
Rectified Spirit	3 fluid ounces.

Macerate the bael for twelve hours in one-third of the water; pour off the clear liquor; repeat the maceration a second and third time for one hour in the remaining two-thirds of the water; press the marc; and filter the mixed liquors through flannel. Evaporate to thirteen fluid ounces; and, when cold, add the rectified spirit.

EXTRACTUM CASCARÆ SAGRADÆ LIQUIDUM.

Liquid Extract of Cascara Sagrada.

Synonym.—EXTRACTUM RHAMNI PURSHIANI LIQUIDUM.

Take of

Cascara Sagrada, in coarse powder	1 pound.
Rectified Spirit	4 fluid ounces.
Distilled Water	a sufficiency.

Boil the bark in three or four successive quantities of the water until exhausted. Evaporate the strained liquors by a water-bath, to twelve fluid ounces; when cold add the spirit, allow the mixture to remain for some hours, then filter, and make up to the volume of sixteen fluid ounces with distilled water.

EXTRACTUM CINCHONÆ LIQUIDUM.

Liquid Extract of Cinchona.

Take of

Red Cinchona Bark, in No. 60 powder	20 ounces.
Hydrochloric Acid	5 fluid drachms.
Glycerine	$2\frac{1}{2}$ fluid ounces.
Rectified Spirit . . .	of each a sufficiency.
Distilled Water . . .	

Exhaust the cinchona bark by macerating it with 5 pints of water, to which the acid and glycerine has been added; now percolate and displace with water until caustic soda gives no precipitate with the percolate. Evaporate the liquid at 180° F., to 20 fluid ounces.

Take 50 grains of this liquid, and exhaust it of alkaloids by adding and shaking with it $\frac{1}{2}$ ounce of solution of soda and 1 ounce of benzolated amylic alcohol.* Separate the alcohol into a weighed dish, and evaporate till the residue is dry. Now weigh, and multiply the weight of residue by 2; the answer gives the weight of alkaloids in 100 fluid grains of the liquid.

Having ascertained the alkaloidal strength of the liquid as above, every fluid part of it containing 5 grains of total alkaloids is first to be brought to the volume of 85 grains by evaporation, or by dilution with water; then 12·5 fluid grains of rectified spirit are to be added, and the final adjustment of the volume to 100 fluid grains is to be effected by the addition of distilled water. The finished product will contain 5 per cent. of total alkaloids.

EXTRACTUM CIMICIFUGÆ LIQUIDUM.

Liquid Extract of Cimicifuga.

Take of

Cimicifuga, in No. 60 powder . .	20 ounces.
Rectified Spirit	a sufficiency.

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* Made by mixing 3 vols. of benzol and 1 vol. of amylic alcohol.

Mix the cimicifuga with 2 pints of the spirit, and macerate in a closed vessel for forty-eight hours; then transfer to a percolator, and, when the fluid ceases to pass, continue the percolation with more spirit until the cimicifuga is exhausted. Reserve the first 15 fluid ounces of the percolate, and evaporate the remainder by a water-bath to the consistence of a soft extract; dissolve this in the reserved portion, and make up the volume to 20 fluid ounces by the addition of more spirit.

A defect of this process is, that at the end the cimicifuga retains about ½ a pint of rectified spirit, which should be recovered by distillation.

EXTRACTUM COCÆ LIQUIDUM.

Liquid Extract of Coca.

Take of

Coca, in No. 40 powder . . .	20 ounces.
Proof Spirit	a sufficiency.

Mix the coca with 2 pints of the spirit, and macerate in a closed vessel for forty-eight hours; then transfer to a percolator, and when the fluid ceases to pass, continue the percolation with more of the spirit, until the coca is exhausted. Reserve the first 15 fluid ounces of the percolate, and evaporate the remainder by a water-bath to the consistence of a soft extract; dissolve this in the reserved portion, and make up the volume to 20 fluid ounces by the addition of more spirit. The process is the same as the previous one.

EXTRACTUM ERGOTÆ LIQUIDUM.

Liquid Extract of Ergot.

Take of

Ergot, crushed	1 pound.
Distilled Water	6 pints.
Rectified Spirit	6 fluid ounces.

Digest the ergot in 4 pints of the water for twelve hours. Draw off the infusion and repeat the digestion with the remainder of the water. Press out, strain, and evaporate the liquors by the heat of a water-bath to 11 fluid ounces; when cold, add the spirit. Allow it to stand for an hour to coagulate, then filter. The product should measure 16 fluid ounces. Used in making ergotin.

EXTRACTUM FILICIS LIQUIDUM.

Liquid Extract of Male Fern.

Take of

Male Fern, in coarse powder .	2 pounds.
Ether	4 pints or a sufficiency.

Pack the male fern closely in a percolator, and pass the ether slowly through it until it passes colourless. Let the ether evaporate on a water-bath, or recover it by distillation, and preserve the oily extract.

EXTRACTUM GLYCYRRHIZÆ LIQUIDUM.

Liquid Extract of Liquorice.

Take of

Liquorice Root, in No. 20 powder .	1 pound.
Distilled Water	4 pints.
Rectified Spirit	a sufficiency.

Macerate the liquorice root with 2 pints of the water for twelve hours, strain and press. Again macerate the pressed marc with the remainder of the water for six hours, strain and press. Mix the strained liquors, heat them to 212° F., and strain through flannel; then evaporate by a water-bath, until it has acquired, when cold, a specific gravity of 1·160; add to this $\frac{1}{6}$ of its volume of rectified spirit; let the mixture stand for twelve hours, and filter.

EXTRACTUM OPII LIQUIDUM.

Liquid Extract of Opium.

Take of

Extract of Opium	1 ounce.
Distilled Water	16 fluid ounces.
Rectified Spirit	4 fluid ounces.

Macerate the extract of opium in the water for an hour, stirring frequently; then add the spirit, and filter. The product should measure 1 pint.

It contains 22 grains of extract of opium nearly, in 1 fluid ounce.

Test.—Analysed as described under "Opium," this liquid extract should yield about 1 per cent. of morphine.

This process of treating opium excludes much of the narcotine and resin; hence the liquid extract causes, when taken, less headache and disturbance than tincture of opium.

EXTRACTUM PAREIRÆ LIQUIDUM.

Liquid Extract of Pareira.

Take of

Extract of Pareira . .	of each a sufficiency.
Distilled Water . .	
Rectified Spirit . .	

Dissolve 4 parts of the extract in a sufficient quantity of a mixture of 1 fluid part of rectified spirit and 3 parts of water to form 16 fluid parts of liquid extract. Filter, if necessary.

EXTRACTUM RHAMNI FRANGULÆ LIQUIDUM.

Liquid Extract of Rhamnus Frangula.

Take of

Rhamnus Frangula Bark, in coarse powder	1 pound.
Rectified Spirit	4 fluid ounces.
Distilled Water	a sufficiency.

Boil the bark in three or four successive quantities of the water, until exhausted. Evaporate the liquors by the heat of a water-bath to 12 fluid ounces; when cold, add the spirit, allow the mixture to remain for some hours, then filter, and make up to the volume of 16 fluid ounces with distilled water.

EXTRACTUM SARSÆ LIQUIDUM.

Liquid Extract of Sarsaparilla.

Synonym.—LIQUOR SARSÆ.

Take of

Jamaica Sarsaparilla, in No. 40 powder	40 ounces.
Proof Spirit	2 pints.
Sugar	5 ounces.
Distilled Water	12 pints.

Mix the sarsaparilla with the spirit, and macerate in a closed vessel for ten days; then press out 20 fluid ounces of liquor, and set this aside. Mix the pressed residue with the water, and macerate at 160° F. for sixteen hours, then strain and press out the liquid, dissolve the sugar in this, and evaporate in a water-bath to about 18 fluid ounces. Mix the two liquids, and make up the volume to 40 fluid ounces by the addition of distilled water.

EXTRACTUM TARAXACI LIQUIDUM.

Liquid Extract of Dandelion.

Take of

Dry Dandelion Root, in No. 20 powder	40 ounces.
Proof Spirit	4 pints.
Distilled Water	a sufficiency.

Mix the dandelion with the spirit, and macerate in a closed vessel for forty-eight hours; then press out 20 fluid ounces of liquid, and set this aside. Mix the pressed residue with the water, and again macerate for forty-eight hours; press out and strain the liquid; evaporate this by a water-bath to about 18 fluid ounces. Mix the two liquids, and make up the volume to 40 fluid ounces by the addition of distilled water.

Of the above liquid extracts the following contain, in each fluid part, the soluble matter of one solid part of the drug from which they are made :—Taraxacum, Sarsaparilla, Rhamnus, Ergot, Coca, Cimicifuga, Cascara, Bael.

GLYCERINA.

Glycerines (8).

The glycerines are useful permanent solutions, mostly designed for local application. They admit of easy dilution with water. Three are of the same strength, viz., glycerines of tannic, gallic, and carbolic acids.

GLYCERINUM AMYLI.

Glycerine of Starch.

Take of

Starch . . .	1 ounce or 1 part.
Glycerine . .	5 fluid ounces or 5 fluid parts.
Distilled Water .	3 fluid ounces or 3 fluid parts.

Stir them together in a porcelain dish, and apply heat, stirring constantly, until the starch particles are completely broken, and a translucent jelly is formed. To avoid burning, the stirring should be very vigorous towards the end of the process.

GLYCERINUM ACIDI GALLICI.

Glycerine of Gallic Acid.

Take of

Gallic Acid . .	1 ounce or 1 part.
Glycerine . .	4 fluid ounces or 4 fluid parts.

Stir them together in a porcelain dish, and apply a temperature not exceeding that of a water-bath until complete solution is effected. Too much heat is likely to change gallic into pyrogallic acid.

GLYCERINUM ACIDI TANNICI.

Glycerine of Tannic Acid.

Take of

Tannic Acid . .	1 ounce or 1 part.
Glycerine . .	4 fluid ounces or 4 fluid parts.

Mix, and dissolve by the heat of a water-bath.

GLYCERINUM ALUMINIS.

Glycerine of Alum.

Take of

Alum, in powder .	1 ounce or 1 part.
Glycerine . .	5 fluid ounces or 5 fluid parts.

Stir them together in a porcelain dish, gently applying heat until solution is effected. Set aside; and pour off the clear fluid from any deposited matter. The deposited matter is a portion of undissolved alum.

GLYCERINUM ACIDI CARBOLICI.

Glycerine of Carbolic Acid.

Take of

Carbolic Acid . .	1 ounce or 1 part.
Glycerine . . .	4 fluid ounces or 4 fluid parts.

Mix and dissolve.

GLYCERINUM BORACIS.

Glycerine of Borax.

Borax, in powder .	1 ounce or 1 part.
Glycerine . . .	4 fluid ounces or 4 fluid parts.
Distilled Water . .	2 fluid ounces or 2 fluid parts.

Rub them together in a mortar until the borax is dissolved; or heat gently until solution is effected.

This preparation is incompatible with bicarbonate of sodium, CO_2 being evolved. The change is due to a reducing action of glycerine on the borax, whereby the solution becomes acid.

GLYCERINUM PLUMBI SUBACETATIS.

Glycerine of Subacetate of Lead.

Take of

Acetate of Lead	5 ounces.
Oxide of Lead, in powder . .	3½ ounces.
Glycerine	1 pint.
Distilled Water	12 fluid ounces.

Mix together and boil for a quarter of an hour; then filter and evaporate until the water is dissipated.

The process is much shortened by boiling the lead salts with 6 ounces of water only, then filtering and mixing with the glycerine, finishing by evaporation.

GLYCERINUM TRAGACANTHÆ.

Glycerine of Tragacanth.

Take of

Tragacanth, in powder	110 grains or 3 parts.
Glycerine . . .	1 fluid ounce or 12 fluid parts.
Distilled Water . .	74 fluid grains or 2 fluid parts.

Mix the tragacanth with the glycerine in a mortar; add the water, and rub until a translucent homogenous jelly is produced. This is a valuable pill excipient, keeping the pills in a condition whereby they are easily dissolved by the gastric fluid.

INFUSA.

Infusions (28).

Preparations made by macerating drugs with water; boiling the drug with water is to be avoided. The time allowed, and conditions for infusing, vary with the nature of the drug. Two infusions are made with cold water, viz., Quassia and Calumba; two with water at 120° F.

viz., Chirata and Cusparia; all others are made with boiling water. Those infusions made with cold water, and at 120° F., are found to keep better thus made.

Acid infusion of roses owes its fine red colour to the presence of sulphuric acid; and infusion of kousso has to be taken without straining, which suggests that the process of infusion is not suited to the drug.

Infusions should not be kept, at the most, more than two days, as they rapidly decompose. When freshly made, they are, however, far superior to the concentrated substitutes often employed.

The dose of most infusions is $\frac{1}{2}$ to 2 fluid ounces. The principal exceptions are: Digitalis, 1 to 4 drachms; Cusso, 4 to 8 ounces.

Infusions macerated a quarter of an hour (5):—

Infusum Anthemidis.
,, Aurantii.
Infusum Aurantii Co.
,, Cusso.
Infusum Digitalis.

Infusions macerated half an hour (17):—

Infusum Buchu.
,, Calumbæ.
,, Caryophylli.
,, Cascarillæ.
,, Catechu.
,, Chiratæ.
,, Ergotæ.
,, Gentianæ Co.
Infusum Jaborandi.
,, Krameriæ.
,, Maticæ.
,, Quassiæ.
,, Rhei.
,, Rosæ Acidum.
,, Senegæ.
,, Sennæ.
Infusum Serpentariæ.

Infusions macerated one hour (5):—

Infusum Cinchonæ Acidum.
,, Cuspariæ.
Infusum Lupuli.
,, Uvæ Ursi.
Infusum Valerianæ.

Infusion macerated two hours:—

Infusum Lini.

INFUSUM ANTHEMIDIS.

Infusion of Chamomile.

Take of

Chamomile Flowers .	½ ounce or 1 part.
Boiling Distilled Water .	10 fl. ounces or 20 fl. parts.

Infuse in a covered vessel for fifteen minutes, and strain.

INFUSUM AURANTII.

Infusion of Orange Peel.

Take of

Bitter-Orange Peel, cut small . . .	½ ounce or 1 part.
Boiling Distilled Water	10 fl. ounces or 20 fl. parts.

Infuse in a covered vessel for fifteen minutes, and strain.

INFUSUM AURANTII COMPOSITUM.

Compound Infusion of Orange Peel.

Take of

Bitter-Orange Peel, cut small . . .	¼ ounce or 4 parts.
Fresh Lemon Peel, cut small . . .	56 grains or 2 parts.
Cloves, bruised . .	28 grains or 1 part.
Boiling Distilled Water	10 fl. ounces or 160 fl. parts.

Infuse in a covered vessel for fifteen minutes, and strain.

INFUSUM BUCHU.

Infusion of Buchu.

Take of

Buchu Leaves, bruised .	½ ounce or 1 part.
Boiling Distilled Water .	10 fl. ounces or 20 fl. parts

Infuse in a covered vessel for half an hour, and strain.

INFUSUM CALUMBÆ.

Infusion of Calumba.

Take of

Calumba Root, cut small	½ ounce or 1 part.
Cold Distilled Water .	10 fl. ounces or 20 fl. parts.

Macerate in a covered vessel for half an hour, and strain.

INFUSUM CARYOPHYLLI.

Infusion of Cloves.

Take of

Cloves, bruised . .	¼ ounce or 1 part.
Boiling Distilled Water .	10 fl. ounces or 40 fl. parts.

Infuse in a covered vessel for half an hour, and strain.

INFUSUM CASCARILLÆ.

Infusion of Cascarilla.

Take of

Cascarilla Bark, in No. 20 powder . . .	1 ounce or 1 part.
Boiling Distilled Water .	10 fl. ounces or 10 fl. parts.

Infuse in a covered vessel for half an hour, and strain.

INFUSUM CATECHU.

Infusion of Catechu.

Take of

Catechu, in coarse powder	160 grains or 5·3 parts.
Cinnamon Bark, bruised	30 grains or 1 part.
Boiling Distilled Water .	10 fl. ounces or 149 fl. parts.

Infuse in a covered vessel for half an hour, and strain.

INFUSUM CHIRATÆ.

Infusion of Chiretta.

Take of

Chiretta, cut small . .	¼ ounce or 1 part.
Distilled Water, at 120° F.	10 fl. ounces or 40 fl. parts.

Infuse in a covered vessel for half an hour, and strain.

INFUSUM CINCHONÆ ACIDUM.

Acid Infusion of Cinchona.

Synonym.—INFUSUM CINCHONÆ.

Take of

Red Cinchona Bark, in No. 40 powder	½ ounce or 1 part.
Aromatic Sulphuric Acid	1 fl. drachm or ¼ fl. part.
Boiling Distilled Water	10 fl. ounces or 20 fl. parts.

Infuse in a covered vessel for one hour, and strain.

INFUSUM CUSPARIÆ.

Infusion of Cusparia.

Take of

Cusparia Bark, in No. 40 powder	½ ounce or 1 part.
Distilled Water, at 120° F.	10 fl. ounces or 20 fl. parts.

Infuse in a covered vessel for one hour, and strain.

INFUSUM CUSSO.

Infusion of Kousso.

Take of

Kousso, in coarse powder	½ ounce or 1 part.
Boiling Distilled Water	8 fl. ounces or 16 fl. parts.

Infuse in a covered vessel for fifteen minutes. Not to be strained.

INFUSUM DIGITALIS.

Infusion of Foxglove.

Take of

Foxglove Leaves, dried	28 grains or 1 part.
Boiling Distilled Water	10 fl. ounces or 156 fl. parts.

Infuse in a covered vessel for fifteen minutes, and strain.

INFUSUM ERGOTÆ.

Infusion of Ergot.

Take of

Ergot, crushed . .	¼ ounce or 1 part.
Boiling Distilled Water .	10 fl. ounces or 40 fl. parts.

Infuse in a covered vessel for half an hour, and strain.

INFUSUM GENTIANÆ COMPOSITUM.

Compound Infusion of Gentian.

Take of

Gentian Root, sliced Bitter-Orange Peel, cut small . .	of each 55 grains or 1 part.
Fresh Lemon Peel, cut small . .	¼ ounce or 2 parts.
Boiling Distilled Water	10 fl. ounces or 80 fl. parts.

Infuse in a covered vessel for half an hour, and strain.

INFUSUM JABORANDI.

Infusion of Jaborandi.

Take of

Jaborandi, cut small .	½ ounce or 1 part.
Boiling Distilled Water .	10 fl. ounces or 20 fl. parts.

Infuse in a covered vessel for half an hour, and strain.

INFUSUM KRAMERIÆ.

Infusion of Rhatany.

Take of

Rhatany Root, in No. 40 powder . .	½ ounce or 1 part.
Boiling Distilled Water .	10 fl. ounces or 20 fl. parts.

Infuse in a covered vessel for half an hour, and strain.

INFUSUM LINI.

Infusion of Linseed.

Take of

Linseed	150 grains or 3 parts.
Dried Liquorice Root, in No. 20 powder . .	50 grains or 1 part.
Boiling Distilled Water .	10 fl. ounces or 87½ fl. parts.

Infuse in a covered vessel for two hours, and strain.

INFUSUM LUPULI.

Infusion of Hop.

Take of

Hop	½ ounce or 1 part.
Boiling Distilled Water .	10 fl. ounces or 20 fl. parts.

Infuse in a covered vessel for one hour, and strain.

INFUSUM MATICÆ.

Infusion of Matico.

Take of

Matico Leaves, cut small .	½ ounce or 1 part.
Boiling Distilled Water .	10 fl. ounces or 20 fl. parts.

Infuse in a covered vessel for half an hour, and strain.

INFUSUM QUASSIÆ.

Infusion of Quassia.

Take of

Quassia Wood, in chips .	55 grains or 1 part.
Cold Distilled Water .	10 fl. ounces or 80 fl. parts.

Macerate in a covered vessel for half an hour, and strain.

INFUSUM RHEI.

Infusion of Rhubarb.

Take of

Rhubarb Root, in thin slices	¼ ounce or 1 part.
Boiling Distilled Water .	10 fl. ounces or 40 fl. parts.

Infuse in a covered vessel for half an hour, and strain.

INFUSUM ROSÆ ACIDUM.

Acid Infusion of Roses.

Take of

Dried Red Rose Petals, broken up . . .	$\frac{1}{4}$ ounce or 2 parts.
Diluted Sulphuric Acid .	1 fl. drachm or 1 fl. part.
Boiling Distilled Water .	10 fl. ounces or 80 fl. parts.

Add the acid to the water, infuse the petals in the mixture in a covered vessel for half an hour, and strain.

INFUSUM SENEGÆ.

Infusion of Senega.

Take of

Senega Root, in No. 20 powder . . .	$\frac{1}{2}$ ounce or 1 part.
Boiling Distilled Water .	10 fl. ounces or 20 fl. parts.

Infuse in a covered vessel for half an hour, and strain.

INFUSUM SENNÆ.

Infusion of Senna.

Take of

Senna . . .	1 ounce or 2 parts.
Ginger, sliced . .	28 grains or $\frac{1}{8}$ part.
Boiling Distilled Water	10 fl. ounces or 20 fl. parts.

Infuse in a covered vessel for half an hour, and strain.

INFUSUM SERPENTARIÆ.

Infusion of Serpentary.

Take of

Serpentary Rhizome, in No. 20 powder . .	$\frac{1}{4}$ ounce or 1 part.
Boiling Distilled Water .	10 fl. ounces or 40 fl. parts.

Infuse in a covered vessel for half an hour, and strain.

INFUSUM UVÆ URSI.

Infusion of Bearberry.

Take of

Bearberry Leaves, bruised	$\frac{1}{2}$	ounce or 1 part.
Boiling Distilled Water .	10	fl. ounces or 20 fl. parts.

Infuse in a covered vessel for one hour, and strain.

INFUSUM VALERIANÆ.

Infusion of Valerian.

Take of

Valerian Rhizome, bruised	$\frac{1}{4}$	ounce or 1 part.
Boiling Distilled Water .	10	fl. ounces or 40 fl. parts.

Infuse in a covered vessel for one hour, and strain.

INJECTIONES.

Injections (3).

Those official are for hypodermic use; that is, they are to be injected under the skin, by means of a special syringe. The general dose may be stated as 3 to 8 minims.

INJECTIO APOMORPHINÆ HYPODERMICA.

Injection of Apomorphine..

Take of

Hydrochlorate of Apomorphine .	2 grains.
Camphor Water	100 minims.

Dissolve and filter. The solution should be made as required for use.

This solution rapidly changes to green and blue; but Dr. Murrell states it does not thus lose activity, especially if preserved with a 1 per cent. solution of carbolic acid. The author has seen it used effectively after three months' keeping. W. Martindale finds a trace of hydrochloric acid keeps it best.

INJECTIO ERGOTINI HYPODERMICA.

Hypodermic Injection of Ergotin.

Take of

Ergotin . .	100 grains or 1 part.
Camphor Water .	200 fluid grains or 2 fluid parts.

Dissolve by stirring them together. The solution should be made as required for use.

The above injection is always strongly acid, which the author believes partly accounts for the pustular eruptions following its injection. A practice which the author has adopted with advantage, is to neutralise the injection with ammonia just before use.

INJECTIO MORPHINÆ HYPODERMICA.

Hypodermic Injection of Morphine.

A solution of acetate of morphine, containing 1 grain of the acetate in 10 minims of the injection.

Take of

Hydrochlorate of Morphine . .	92 grains.
Solution of Ammonia . . .	of each a sufficiency.
Acetic Acid	
Distilled Water	

Dissolve the hydrochlorate of morphine in 2 ounces of distilled water, aiding the solution by gently heating; then add solution of ammonia so as to precipitate the morphine, and render the liquid slightly alkaline; allow it to cool; collect the precipitate on a filter, wash it with distilled water, and allow it to drain; then transfer the morphine to a small porcelain dish with about 1 ounce of distilled water, apply heat gently, and carefully add acetic acid until the morphine is dissolved, and a very slightly acid solution is formed. Add now sufficient distilled water to make the solution measure exactly 2 fluid ounces. Filter, and preserve the product in a stoppered bottle excluded from the light.

When fresh made, it is quite clear, having a faint brown colour. By keeping it darkens, and deposits granular particles of pure morphine, acetic acid escaping, and the solution becoming alkaline. When such is the case, warm the solution, adding, drop by drop, acetic acid, till the precipitate is dissolved. This treatment recovers the solution.

LAMELLÆ.

Discs (3).

These are small, thin, circular discs, having a basis of gelatine, with a small quantity of glycerine. They are all intended for ophthalmic use. Atropine dilates the pupil. Cocaine deadens sensation. Physostigmine contracts the pupil. Dissolved in a little water they are convenient for hypodermic injection.

LAMELLÆ ATROPINÆ.

Discs of Atropine.

Discs of gelatine, with some glycerine, each weighing $\frac{1}{50}$ grain, and containing $\frac{1}{5000}$ grain of sulphate of atropine.

LAMELLÆ COCAINÆ.

Discs of Cocaine.

Discs of gelatine, with some glycerine, each weighing about $\frac{1}{50}$ grain, and containing $\frac{1}{200}$ grain of hydrochlorate of cocaine.

LAMELLÆ PHYSOSTIGMINÆ.

Discs of Physostigmine.

Discs of gelatine, with some glycerine, each weighing about $\frac{1}{50}$ grain, and containing $\frac{1}{1000}$ grain of physostigmine.

LINIMENTA.

Liniments (16).

Mostly compounds of an oily nature for rubbing on the skin to produce stimulation or relieve pain. The majority contain camphor and rectified spirit. In making three of the liniments chemical changes are brought about, soaps being formed, viz., in the liniments of lime, ammonia, and mercury.

Liniment of iodine partakes more of the character of a pigment or paint, and should always be applied with a brush; if rubbed on the skin it raises a blister.

LINIMENTUM ACONITI.

Liniment of Aconite.

Take of

Aconite Root, in No. 40 powder .	20 ounces.
Camphor	1 ounce.
Rectified Spirit, a sufficiency to make	30 fluid ounces.

Mix the aconite with 20 fluid ounces of the spirit, and macerate in a closed vessel for three days, agitating occasionally; then transfer to a percolator, and, when the liquor ceases to pass, continue the percolation with more of the spirit, allowing the liquor to drop into a receiver containing the camphor, until the product measures the quantity above stated.

In the above process much spirit is held in the root, by absorption, after the 30 ounces have been collected. Instructions should have been given for its recovery by distillation.

LINIMENTUM AMMONIÆ.

Liniment of Ammonia.

Take of

Solution of Ammonia . .	1 fl. ounce or 1 fl. part.
Olive Oil	3 fl. ounces or 3 fl. parts.

Mix well with agitation.

LINIMENTUM BELLADONNÆ.

Liniment of Belladonna.

Take of

Belladonna Root, in No. 40 powder	20 ounces.
Camphor	1 ounce.
Rectified Spirit, a sufficiency to make	30 fl. ounces.

Made the same way as aconite liniment. The same remarks apply to it.

LINIMENTUM CALCIS.

Liniment of Lime.

Take of

Solution of Lime	2 fl. ounces or 1 fl. part.
Olive Oil	2 fl. ounces or 1 fl. part.

Mix together with agitation. Oleate of lime and glycerine are formed.

LINIMENTUM CAMPHORÆ.

Liniment of Camphor.

Take of

Camphor	1 ounce or 1 part.
Olive Oil	4 fl. ounces or 4 fluid parts.

Dissolve the camphor in the oil.

LINIMENTUM CAMPHORÆ COMPOSITUM.

Compound Liniment of Camphor.

Take of

Camphor	2½ ounces or 20 parts.
Oil of Lavender	1 fl. drachm or 1 fl. part.
Strong Solution of Ammonia	5 fl. ounces or 40 fl. parts.
Rectified Spirit	15 fl. ounces or 120 fl. parts.

Mix and dissolve.

LINIMENTUM CHLOROFORMI.

Liniment of Chloroform.

Take of

Chloroform	2 fl. ounces or 1 fl. part.
Liniment of Camphor	2 fl. ounces or 1 fl. part.

Mix.

LINIMENTUM CROTONIS.

Liniment of Croton Oil.

Take of

Croton Oil	1 fluid ounce or 2 fluid parts.
Oil of Cajuput	$3\frac{1}{2}$ fluid ounces or 7 fluid parts.
Rectified Spirit	$3\frac{1}{2}$ fluid ounces or 7 fluid parts.

Mix.

LINIMENTUM HYDRARGYRI.

Liniment of Mercury.

Take of

Ointment of Mercury	1 ounce or 1 part.
Solution of Ammonia	1 fluid ounce or 1 fluid part.
Liniment of Camphor	1 fluid ounce or 1 fluid part.

Mix the solution of ammonia with one half of the liniment of camphor; rub the mercurial ointment with the other half; then mix them together.

LINIMENTUM IODI.

Liniment of Iodine.

Take of

Iodine	$1\frac{1}{4}$ ounce or 5 parts.
Iodide of Potassium	$\frac{1}{2}$ ounce or 2 parts.
Glycerine	$\frac{1}{4}$ ounce or 1 part.
Rectified Spirit	10 fluid ounces or 40 fluid parts.

Dissolve the iodine, iodide of potassium, and glycerine in the spirit.

LINIMENTUM OPII.

Liniment of Opium.

Take of

Tincture of Opium	. 2 fluid ounces or 1 fluid part.
Liniment of Soap .	. 2 fluid ounces or 1 fluid part.

Mix and filter.

LINIMENTUM POTASSII IODIDI CUM SAPONE.

Liniment of Iodide of Potassium and Soap.

Take of

Curd Soap, cut small .	2 ounces or 16 parts.
Iodide of Potassium .	1¼ ounce or 12 parts.
Glycerine . . .	1 fluid ounce or 8 fluid parts.
Oil of Lemon . .	1 fluid drachm or 1 fluid part.

Reduce the soap to fine shreds, and mix this with the water and glycerine in a porcelain dish over a water-bath. When the soap is dissolved, pour the liquid into a mortar in which the iodide of potassium has previously been powdered. Mix briskly, and continue the trituration until the mixture is cold. Set aside for an hour; then rub well the oil of lemon into the cream-like product.

LINIMENTUM SAPONIS.

Liniment of Soap.

Take of

Hard Soap, in fine shavings . . .	2 ounces or 16 parts.
Camphor . .	1 ounce or 8 parts.
Oil of Rosemary .	3 fluid drachms or 3 fluid parts.
Rectified Spirit .	16 fluid ounces or 128 fluid parts.
Distilled Water .	4 fluid ounces or 32 fluid parts.

Mix the water with the spirit, and add the oil of rosemary, the soap, and the camphor. Macerate for seven days at a temperature not exceeding 70° F., with occasional agitation, and filter.

The precaution as to temperature is to prevent the liniment from gelatinising; there is no necessity for its observance, if the official hard soap be used; if the soap is in fine shavings, it can be filtered in seven minutes instead of seven days. When curd soap is used, the liniment will gelatinise above 70° F.

LINIMENTUM SINAPIS COMPOSITUM.

Compound Liniment of Mustard.

Take of

Oil of Mustard .	1 fluid drachm or 1·4 fluid part.
Ethereal Extract of Mezereon .	40 grains or 1 part.
Camphor .	120 grains or 3 parts.
Castor Oil .	5 fluid drachms or 7 fluid parts.
Rectified Spirit .	4 fluid ounces or 44 fluid parts.

Dissolve the extract of mezereon and camphor in the spirit, and add the oil of mustard and castor oil.

LINIMENTUM TEREBINTHINÆ.

Liniment of Turpentine.

Take of

Soft Soap .	2 ounces or 2 parts.
Distilled Water .	2 fluid ounces or 2 fluid parts.
Camphor .	1 ounce or 1 part.
Oil of Turpentine .	16 fluid ounces or 16 fluid parts.

Mix the soap with the water; dissolve the camphor in the oil of turpentine; then mix.

LINIMENTUM TEREBINTHINÆ ACETICUM.

Liniment of Turpentine and Acetic Acid.

Take of

Oil of Turpentine .	4 fluid ounces or 4 fluid parts.
Glacial Acetic Acid .	1 ounce or 1 part.
Liniment of Camphor .	4 fluid ounces or 4 fluid parts.

Mix.

LIQUORES.

Solutions (48).

These are clear liquids, containing various substances in a state of equal distribution throughout the solvent. Solutions do not admit of any good method of classification, but the following arrangement may prove useful :—

Solutions of Alkaloid Salts (5).

These are 1 per cent. solutions, except that of Bimeconate of Morphine, which contains about 1¼ per cent. Acid is used, in most cases, to aid solution, and spirit as a preservative.

LIQUOR ATROPINÆ SULPHATIS.

Solution of Sulphate of Atropine.

Take of

Sulphate of Atropine .	9 grains or 1 part.
Camphor Water . .	16½ fl. drachms or 99 fl. parts.

Dissolve.

LIQUOR MORPHINÆ ACETATIS.

Solution of Acetate of Morphine.

Take of

Acetate of Morphine .	9 grains or 1 part.
Diluted Acetic Acid .	18 minims or 2 fluid parts.
Rectified Spirit .	½ fl. ounce or 24 fl. parts.
Distilled Water .	1½ fl. ounces or 73 fl. parts.

Mix the acid, the spirit, and the water, and dissolve the acetate of morphine in the mixture.

Solution of Acetate of Morphine may also be prepared by diluting 90 minims of Injectio Morphinæ Hypodermica with sufficient of a mixture of 1 volume of rectified spirit and 2 volumes of water, to form 2 fluid ounces of the solution.

LIQUOR MORPHINÆ BIMECONATIS.

Solution of Bimeconate of Morphine.

Take of

Hydrochlorate of Morphine	9 grains.
Solution of Ammonia	a sufficiency.
Meconic Acid	6 grains.
Rectified Spirit	½ fluid ounce.
Distilled Water	a sufficiency.

Dissolve the hydrochlorate of morphine in 2 or 3 drachms of distilled water, aiding solution by warmth; then add solution of ammonia until morphine ceases to be precipitated; cool; filter; wash the precipitate with distilled water, until the washings cease to give a precipitate with nitrate of silver; drain; mix the precipitate with sufficient water to produce 1½ ounce; add the rectified spirit and the meconic acid; dissolve.

One fluid ounce of this solution contains about 5½ grains, equal to about 1¼ per cent. of bimeconate of morphine ($C_{17}H_{19}NO_3,C_7H_4O_7$). The solution, as regards meconate of morphine, is about the same strength as tincture of opium. Its character as a meconate is shown by the deep-red colour it gives with ferric chloride.

LIQUOR MORPHINÆ HYDROCHLORATIS.

Solution of Hydrochlorate of Morphine.

Take of

Hydrochlorate of Morphine	9 grains or 1 part.
Diluted Hydrochloric Acid	18 minims or 2 fluid parts.
Rectified Spirit	½ fluid ounce or 24 fluid parts.
Distilled Water	1½ fluid ounce or 73 fluid parts.

Mix the hydrochloric acid, the spirit, and the water, and dissolve the hydrochlorate of morphine in the mixture.

LIQUOR STRYCHNINÆ HYDROCHLORATIS.

Solution of Hydrochlorate of Strychnine.

Synonym.—LIQUOR STRYCHNIÆ.

Take of

Strychnine, in crystals .	9 grains or 1 part.
Diluted Hydrochloric Acid	14 minims or 2 fluid parts.
Rectified Spirit . .	$\frac{1}{2}$ fl. ounce or 24 fl. parts.
Distilled Water . .	$1\frac{1}{2}$ fl. ounce or 73 fl. parts.

Mix the hydrochloric acid with 4 drachms of the water, and dissolve the strychnine in the mixture by the aid of heat. Then add the spirit and the remainder of the water.

Arsenical Solutions (3).

The first two contain 1 per cent. of arsenic; the third contains 1 per cent. each of arsenious iodide, AsI_3, and mercuric iodide, HgI_2.

LIQUOR ARSENICALIS.

Arsenical Solution.

Synonyms.—LIQUOR POTASSÆ ARSENITIS; FOWLER'S SOLUTION.

Take of

Arsenious Acid, in powder .	of each 87 grains.
Carbonate of Potassium . .	
Compound Tincture of Lavender .	5 fluid drachms.
Distilled Water	a sufficiency.

Place the arsenious acid and the carbonate of potassium in a flask with 10 ounces of the water, and apply heat until a clear solution is obtained. Allow this to cool. Then add the compound tincture of lavender, and as much distilled water as will make the bulk one pint. This solution is designed to be prescribed with alkalies.

LIQUOR ARSENICI HYDROCHLORICUS.

Hydrochloric Solution of Arsenic.

Take of

Arsenious Acid, in powder	87 grains.
Hydrochloric Acid	2 fluid drachms.
Distilled Water	a sufficiency.

Boil the arsenious acid with the hydrochloric acid and 4 ounces of the water until it is dissolved, then add distilled water to make the bulk up to one pint.

LIQUOR ARSENII ET HYDRARGYRI IODIDI.

Solution of Iodide of Arsenium and Mercury.

Synonym.—DONOVAN'S SOLUTION.

Take of

Iodide of Arsenium	of each 45 grains.
Red Iodide of Mercury	
Distilled Water	a sufficiency.

Triturate the iodides with about 1½ ounce of distilled water until nearly all is dissolved. Pass through a filter, and wash the latter with sufficient water to produce 10 fluid ounces of solution.

Calcium Solutions (4).

The first is known as lime water; it contains about ½ grain of lime, CaO, in the fluid ounce. The second, known as saccharated solution of lime, contains 7 grains of lime in the fluid ounce. The sugar increases the solubility of the lime in the water 14 times.

LIQUOR CALCIS.

Solution of Lime.

Synonyms.—AQUA CALCIS; LIME WATER.

Take of

Slaked Lime	2 ounces.
Distilled Water	a sufficiency.

Wash the slaked lime with some of the water until a little of the filtered liquid, after being acidified with nitric acid, yields no turbidity with solution of nitrate of silver. Put the washed lime into a stoppered bottle containing 1 gallon of the water, and shake well for two or three minutes. After twelve hours the excess of lime will have subsided, and the clear solution may be drawn off with a siphon as it is required for use, or transferred to a green-glass bottle furnished with a well-ground stopper. The washing in the above process is done to free the lime from chloride.

LIQUOR CALCIS SACCHARATUS.

Saccharated Solution of Lime.

Take of

Slaked Lime	1 ounce or 1 part.
Refined Sugar, in powder . .	2 ounces or 2 parts.
Distilled Water	1 pint or 20 parts.

Mix the lime and the sugar by trituration in a mortar. Transfer the mixture to a bottle containing the water, and having closed this with a cork, shake it occasionally for a few hours. Finally, separate the clear solution with a siphon, avoiding unnecessary exposure to air, and keep it in a well-stoppered bottle. This solution changes brown with age. The change can be retarded by exclusion of air.

No instructions are given for washing the lime, as in the previous solution; it is perhaps an oversight, there can be no doubt it should be done.

LIQUOR CALCIS CHLORINATÆ

Solution of Chlorinated Lime.

Take of

Chlorinated Lime . . .	1 pound or 1 part.
Distilled Water . . .	1 gallon or 10 parts.

Mix well the water and the chlorinated lime by trituration in a mortar, and, having poured the mixture into a stoppered bottle, let it be well shaken several times for the space of three hours. Pour out now the contents of the bottle on a calico filter, and let the solution which passes through be preserved in a stoppered bottle.

When the solution of chlorinated lime is made with the best chlorinated lime, and is quite fresh, it may yield about 3 per cent. of available chlorine, but should not yield less than 2 per cent.

LIQUOR CALCII CHLORIDI.

Solution of Chloride of Calcium.

Take of

Chloride of Calcium .	88 grains or 1 part.
Distilled Water . .	1 fluid ounce or 5 fluid parts.

Dissolve, and filter if necessary. Specific gravity 1·145.

Ammonia Solutions (6).

LIQUOR AMMONIÆ.

Solution of Ammonia.

Ammoniacal gas, NH_3, dissolved in water.

Take of

Strong Solution of Ammonia .	1 pint or 1 fl. part.
Distilled Water . . .	2 pints or 2 fl. parts.

Mix, and preserve in a stoppered bottle.

It contains 10 per cent. by weight of ammonia gas, NH_3. Specific gravity 0·959.

LIQUOR AMMONIÆ FORTIOR.

Strong Solution of Ammonia.

Ammoniacal gas, NH_3, dissolved in water, and constituting 32·5 per cent. of the solution. It may be obtained by the following process :—

Take of

Chloride of Ammonium, in coarse powder	3 pounds.
Slaked Lime	4 pounds.
Distilled Water	32 fluid ounces.

Place the mixed lime and ammonia in a properly made iron bottle, connected with 2 empty Woulf's bottles, a flask containing 22 ounces of water, and a bottle containing 10 ounces of water. Apply heat to the iron bottle, ammonia gas is given off, and absorbed by the water in the bottles. The strong solution of ammonia thus obtained is diluted, till it has a specific gravity of 0·891.

LIQUOR AMMONII ACETATIS.

Solution of Acetate of Ammonium.

Acetate of ammonium, $NH_4C_2H_3O_2$, dissolved in water.

Take of

Strong Solution of Acetate of Ammonium	4 fl. ounces or 1 fl. part.
Distilled Water, sufficient to produce	20 fl. ounces or 5 fl. parts.

Mix. The solution should be stored in bottles free from lead. Specific gravity 1·022.

LIQUOR AMMONII ACETATIS FORTIOR.

Strong Solution of Acetate of Ammonium.

Take of

Carbonate of Ammonium	$15\frac{1}{2}$ ounces.
Acetic Acid	50 fluid ounces, or a sufficiency.
Distilled Water	a sufficiency.

Crush the carbonate of ammonium; add it gradually to about 45 ounces of the acetic acid; then add more of the acid, until a neutral liquid results. Specific gravity 1·073.

LIQUOR AMMONII CITRATIS.

Solution of Citrate of Ammonium.

Citrate of ammonium, $(NH_4)_3C_6H_5O_7$, dissolved in water.

Take of

Strong Solution of Citrate of Ammonium . .	5 fl. ounces or 1 fl. part.
Distilled Water, sufficient to produce . . .	20 fl. ounces or 4 fl. parts.

Mix. The solution should be stored in bottles free from lead. Specific gravity 1·062.

LIQUOR AMMONII CITRATIS FORTIOR.

Strong Solution of Citrate of Ammonium.

Take of

Citric Acid . . .	12 ounces.
Strong Solution of Ammonia . . .	11 fl. ounces or a sufficiency.
Distilled Water . .	a sufficiency.

Neutralise the acid with ammonia, adding sufficient distilled water to yield 24 ounces of product. The solution should be stored in bottles free from lead. Specific gravity 1·245.

Potassium Solutions (5).

LIQUOR POTASSÆ.

Solution of Potash.

Take of

Carbonate of Potassium . . .	1 pound.
Slaked Lime, washed . . .	12 ounces.
Distilled Water	1 gallon.

Dissolve the carbonate of potassium in the water; and, having heated the solution to the boiling-point in a clean iron vessel, gradually mix with it the washed slaked lime (obtained from about 13 ounces of slaked lime washed with distilled water until a little of the washing, acidified with nitric acid, gives no cloudiness with nitrate of silver), and continue the ebullition for ten minutes with constant stirring. Then remove the vessel from the fire; and when, by the subsidence of the insoluble matter, the supernatant liquor has become perfectly clear, transfer it, by means of a siphon, to a green-glass bottle furnished with an air-tight stopper, and add distilled water, if necessary, to make its specific gravity 1·058. One fluid ounce contains 27 grains of hydrate of potassium.

This solution is liable to many impurities. Carbonates are detected by effervescence with HCl. Lime salts are detected by diluting the potash with water, and adding oxalate of ammonium; they give a white precipitate. Chlorides are detected by acidulating with nitric acid, then adding nitrate of silver; they give a white precipitate.

LIQUOR POTASSÆ EFFERVESCENS.

Effervescing Solution of Potash.

Take of

Bicarbonate of Potassium . .	30 grains.
Water	1 pint.

Dissolve the bicarbonate of potassium in water, and filter the solution; then force into it as much pure washed carbonic acid gas, obtained by the action of sulphuric acid on chalk, as can be introduced by a pressure of about four atmospheres. Keep the solution in bottles securely closed, to prevent the escape of the compressed gas.

LIQUOR POTASSI PERMANGANATIS.

Solution of Permanganate of Potassium.

Take of

Permanganate of Potassium .	88 grains or 1 part.
Distilled Water . . .	1 pint or 99 fl. parts.

Dissolve.

Sodium Solutions (5).

LIQUOR SODÆ.

Solution of Soda.

Take of

Carbonate of Sodium	28 ounces.
Slaked Lime, washed	12 ounces.
Distilled Water	1 gallon.

Made in the same manner as solution of potash, the specific gravity being brought to 1·047. One fluid ounce contains 18·8 grains of hydrate of sodium. It is subject to the same impurities as solution of potash.

LIQUOR SODÆ CHLORINATÆ.

Solution of Chlorinated Soda.

Take of

Chlorinated Lime	16 ounces.
Carbonate of Sodium	24 ounces.
Distilled Water	1 gallon.

Dissolve the carbonate of sodium in 2 pints of the distilled water: thoroughly triturate the chlorinated lime with 6 pints of the water, and filter; well mix the solutions; again filter. Keep the solution in a stoppered bottle, in a cool and dark place.

It has a specific gravity of 1·054, and should contain 2½ per cent. of available chlorine.

LIQUOR SODÆ EFFERVESCENS.

Effervescing Solution of Soda.

Take of

Bicarbonate of Sodium	30 grains.
Water	1 pint.

Made in the same manner as the effervescing solution of potash.

LIQUOR SODII ARSENIATIS.

Solution of Arseniate of Sodium.

Take of

Arseniate of Sodium, rendered anhydrous by a temperature not exceeding 300° F.	9 grains or 1 part.
Distilled Water	16½ fl. drachms or 99 fl. parts.

Dissolve.

The arseniate of sodium is made anhydrous, so as to obtain a uniform strength of solution, the commercial salt containing varying quantities of water of crystallisation.

LIQUOR SODII ETHYLATIS.

Solution of Ethylate of Sodium.

Take of

Metallic Sodium, free from oxide	22 grains or 1 part.
Ethylic Alcohol	1 fluid ounce or 20 fluid parts.

Dissolve the sodium in the ethylic alcohol contained in a flask, the latter being kept cool in a stream of cold water. The solution should be recently prepared, as it changes colour, and takes up CO_2 to form carbonate of sodium. It contains 19 per cent. of ethylate of sodium.

Iron Solutions (7).

LIQUOR FERRI ACETATIS.

Solution of Acetate of Iron.

Synonyms.—SOLUTION OF FERRIC ACETATE; SOLUTION OF PERACETATE OF IRON.

The same strength as Tincture of Acetate of Iron.

Take of

Strong Solution of Acetate of Iron .	5 fluid ounces.
Distilled Water, sufficient to produce, after admixture	20 fluid ounces.

Specific gravity 1·031.

LIQUOR FERRI ACETATIS FORTIOR.

Strong Solution of Acetate of Iron.

Take of

Solution of Persulphate of Iron . .	5 fluid ounces.
Solution of Ammonia . . .	a sufficiency.
Glacial Acetic Acid, liquefied . .	3 fluid ounces.
Distilled Water	a sufficiency.

Mix 8 fluid ounces of solution of ammonia with 1 pint of distilled water; to this gradually add the solution of persulphate of iron previously diluted with about 1 pint of distilled water; stir the whole thoroughly, taking care that ammonia is, even finally, in slight excess, as indicated by the odour of the mixture. Let the whole stand for two hours, stirring occasionally; then put it on a calico filter; wash the precipitated ferric hydrate with distilled water until the liquid ceases to give a precipitate with solution of chloride of barium. Let the ferric hydrate drain; squeeze it to remove superfluous moisture; dissolve it in the glacial acetic acid; and make the volume up to 10 fluid ounces with distilled water. Specific gravity 1·127. 100 minims should yield 9·5 grains Fe_2O_3.

LIQUOR FERRI DIALYSATUS.

Solution of Dialysed Iron.

This solution of dialysed iron, so called, is a solution of highly basic ferric oxychloride, or chloroxide of iron, from which most of the acidulous matter has been removed by dialysis.

Take of

Strong Solution of Perchloride of Iron	7 fluid ounces.
Solution of Ammonia	a sufficiency of each.
Distilled Water	

Mix 6 ounces of the solution of perchloride of iron with 2 pints of distilled water, and stir into the mixture sufficient diluted solution of ammonia to impart, after thorough agitation, a distinct ammoniacal odour. Filter through calico; wash the precipitated ferric hydrate with distilled water; then squeeze it. Add the precipitate to the remaining perchloride of iron, stir thoroughly, warm gently, and, when solution is obtained, filter if necessary, and place the liquid in a covered dialyser; then float the dialyser on a stream of water, until the solution on the dialyser is almost tasteless. The resulting solution should measure 28 fluid ounces. Specific gravity 1·047. One hundred grains should yield 5 grains Fe_2O_3.

Note.—This solution is incompatible with most organic matter, and even gives a precipitate with common water.

LIQUOR FERRI PERCHLORIDI.

Solution of Perchloride of Iron.

Synonym.—SOLUTION OF FERRIC CHLORIDE.

The same strength as tincture of perchloride of iron.

Take of

Strong Solution of Perchloride of Iron	5 fluid ounces.
Distilled Water, sufficient to produce, after admixture . .	20 fluid ounces.

Specific gravity 1·11.

LIQUOR FERRI PERCHLORIDI FORTIOR.

Strong Solution of Perchloride of Iron.

Take of

Iron Wire	4 ounces.
Hydrochloric Acid . .	20½ fluid ounces.
Nitric Acid	1½ fluid ounce.
Distilled Water . . .	a sufficiency.

Place the iron wire in a flask; add 12½ fluid ounces of hydrochloric acid, and 7 of water; expose to a moderate temperature until effervescence ceases; heat to boiling; filter from undissolved iron; add to the filtrate 7 fluid ounces of hydrochloric acid; mix, and pour the solution in a slow continuous stream into 1½ fluid ounce of nitric acid, evolution of red fumes being promoted, if necessary, by a slight application of heat. Evaporate the product until no more nitrous fumes escape, and a precipitate begins to form; then add 1 fluid ounce of hydrochloric acid and sufficient water to produce 17½ fluid ounces of solution. Specific gravity, about 1·42.

A fluid drachm of it diluted with 2 fluid ounces of water gives, upon the addition of an excess of solution of ammonia, a reddish-brown precipitate, which, when well washed and incinerated, weighs between 15 and 16 grains. A piece of copper boiled for a few minutes in 50 or 100 grains of this solution, diluted with water, then rinsed in water, dried, and heated in a dry test-tube, yields no white crystalline sublimate, showing absence of arsenic. Two ounces of iron are contained in 10 fluid ounces of the solution.

LIQUOR FERRI PERNITRATIS.

Solution of Pernitrate of Iron.

Take of

Fine Iron Wire, free from rust .	1 ounce.
Nitric Acid	$4\frac{1}{2}$ fluid ounces.
Distilled Water	a sufficiency.

Dilute the nitric acid with 16 ounces of the water, introduce the iron wire into the mixture, and leave them in contact until the metal is dissolved. Filter the solution, and add as much water as will make its bulk $1\frac{1}{2}$ pint. Specific gravity 1·107. One fluid drachm should yield 2·6 grains Fe_2O_3.

LIQUOR FERRI PERSULPHATIS.

Solution of Persulphate of Iron.

Synonym.—SOLUTION OF FERRIC SULPHATE.

Take of

Sulphate of Iron .	8 ounces.
Sulphuric Acid . Nitric Acid . .	of each, 6 fluid drachms.
Distilled Water .	12 fluid ounces, or a sufficiency.

Add the sulphuric acid to 10 ounces of the water, and dissolve the sulphate of iron in the mixture with the aid of heat. Mix the nitric acid with the remaining 2 ounces of the water, and add to this, when warmed, the solution of sulphate of iron. Concentrate by boiling, until, by the sudden disengagement of ruddy vapours, the liquid ceases to be black, and acquires a red colour. When the solution is cold, make the quantity 11 fluid ounces by the addition, if necessary, of distilled water. Specific gravity, 1·441. One fluid drachm should yield 11·44 grains of Fe_2O_3.

Lead Solutions (2).

LIQUOR PLUMBI SUBACETATIS DILUTUS.

Diluted Solution of Subacetate of Lead.

Take of

Solution of Subacetate of Lead . . .	of each 2 fl. drachms or 1 fl. part.
Rectified Spirit . . .	
Distilled Water . .	19½ fl. ounces or 99 fl. parts.

Mix, and filter through paper. Keep the clear solution in a stoppered bottle.

LIQUOR PLUMBI SUBACETATIS.

Solution of Subacetate of Lead.

Subacetate of Lead, $Pb_2O(C_2H_3O_2)_2$, dissolved in water.

Acetate of Lead . . .	5 ounces.
Oxide of Lead, in powder .	3½ ounces.
Distilled Water . . .	1 pint or a sufficiency.

Boil the acetate of lead and the oxide of lead in the water for half an hour, constantly stirring; then filter, and when the liquid is cold, add to it more distilled water, until the product measures 20 fluid ounces. Keep the clear solution in stoppered bottles.

Specific gravity 1·275. It contains 24 per cent. of subacetate of lead.

On diluting this solution with distilled water a white precipitate is often observed; it is due, generally, to the presence of CO_2 in the water.

Magnesium Solutions (2).

The first contains carbonate of magnesium, held in solution by carbonic acid gas. By keeping it often deposits crystals of hydrated carbonate of magnesium. The second is a kind of effervescent purgative lemonade.

LIQUOR MAGNESII CARBONATIS.

Solution of Carbonate of Magnesium.

Synonym.—FLUID MAGNESIA.

Take of

Sulphate of Magnesium . . .	2 ounces.
Carbonate of Sodium . . .	2½ ounces.
Distilled Water	a sufficiency.

Dissolve the two salts separately, each in half a pint of water. Heat the solution of sulphate of magnesium to the boiling-point, then add to it the solution of carbonate of sodium, and boil them together until carbonic acid ceases to be evolved. Collect the precipitated carbonate of magnesium on a calico filter, and wash it with distilled water, until what passes ceases to give a precipitate with chloride of barium. Mix the washed precipitate with a pint of distilled water, and, putting them into a suitable apparatus, force into it pure washed carbonic acid gas, obtained by the action of sulphuric acid on chalk. Let the mixture remain in contact with excess of carbonic acid, retained there under pressure of about three atmospheres for twenty-four hours or longer, then filter the liquid, to remove any undissolved carbonate of magnesium, and again pass carbonic acid gas into the filtered solution. Finally, keep the solution in a bottle securely closed, to prevent the escape of carbonic acid.

This solution contains nearly ten grains of the official carbonate of magnesium in a fluid ounce, or about 2 per cent.

LIQUOR MAGNESII CITRATIS.

Solution of Citrate of Magnesium.

Synonym.—Effervescing Solution of Citrates of Magnesium and Potassium.

Take of

Carbonate of Magnesium . .	100	grains.
Citric Acid	200	grains.
Syrup of Lemons	$\frac{1}{2}$	fluid ounce.
Bicarbonate of Potassium, in crystals	40	grains.
Water		a sufficiency.

Dissolve the citric acid in 2 ounces of the water, and having added the carbonate of magnesium, stir until it is dissolved. Filter the solution into a strong half-pint bottle, add the syrup and sufficient water to nearly fill the bottle, then introduce the bicarbonate of potassium, and immediately close the bottle with a cork, which should be secured with string or wire. Afterwards shake the bottle until the bicarbonate of potassium has dissolved.

Mercurial Solutions (2).

The first is an important solution, containing $\frac{1}{16}$ grain of perchloride of mercury in each drachm. The chloride of ammonium is added to render the solution more stable by forming a double salt called Sal Alembroth.

LIQUOR HYDRARGYRI PERCHLORIDI.

Solution of Perchloride of Mercury.

Synonyms.—Liquor Hydrargyri Bichloridi; Solution of Mercuric Chloride.

Take of

Perchloride of Mercury	of each 10 grains or 1 part.
Chloride of Ammonium	
Distilled Water . .	1 pint or 875 fluid parts.

Dissolve.

By long keeping this solution will often deposit a film of a mercurous salt on the side of the bottle.

LIQUOR HYDRARGYRI NITRATIS ACIDUS.

Acid Solution of Nitrate of Mercury.

Synonyms.—ACID SOLUTION OF MERCURIC NITRATE; ACID SOLUTION OF PERNITRATE OF MERCURY.

Take of

Mercury	4 ounces.
Nitric Acid	5 fluid ounces.
Distilled Water	1½ fluid ounce.

Mix and dissolve with heat. The product should weigh about 12 ounces.

Various Solutions.

LIQUOR ACIDI CHROMICI.

Solution of Chromic Acid.

A solution containing the equivalent of 25 per cent. of anhydrous chromic acid, or chromic anhydride, CrO_3; or 29·5 per cent. of real chromic acid, H_2CrO_4.

Take of

Chromic Acid	1 ounce or 1 part.
Distilled Water	3 fluid ounces or 3 fluid parts.

Dissolve.

Chromic Acid.—This so-called acid is an anhydride made by the action of sulphuric acid on a solution of bichromate of potassium.

It forms crimson acicular crystals, very soluble in water. It is a powerful oxidising agent, changes alcohol to aldehyd, and evolves oxygen when heated.

LIQUOR ANTIMONII CHLORIDI.

Solution of Chloride of Antimony.

Take of

Purified Black Antimony	1 pound.
Hydrochloric Acid	4 pints.

Dissolve with heat in a fume-chamber, and reduce the product to 2 pints by evaporation. Specific gravity, 1·47.

LIQUOR BISMUTHI ET AMMONII CITRATIS.

Solution of Citrate of Bismuth and Ammonium.

Synonym.—LIQUOR BISMUTHI.

Take of

Citrate of Bismuth	800 grains.
Solution of Ammonia	of each a sufficiency.
Distilled Water	

Rub the citrate of bismuth to a paste with a little of the water; add the solution of ammonia gradually and with stirring, until the salt is just dissolved. Dilute with distilled water to form 1 pint.

One fluid drachm contains an amount of bismuth equivalent to about 3 grains of oxide of bismuth.

LIQUOR CHLORI.

Solution of Chlorine.

Chlorine gas dissolved in water. The solution should be freshly prepared, as it is very unstable.

Take of

Hydrochloric Acid	6 fluid ounces.
Black Oxide of Manganese, in fine powder	1 ounce.
Distilled Water	34 fluid ounces.

Put the oxide of manganese into a gas-bottle, and, having poured upon it the hydrochloric acid diluted with 2 ounces of the water, apply heat gently, and, by suitable tubes, cause the gas, as it is developed, to pass through 2 ounces of the water placed in an intermediate small phial, and thence to the bottom of a 3-pint bottle, containing the remainder of the water, the mouth of which is loosely plugged with tow. Specific gravity, 1·003. One fluid ounce corresponds to 2·66 grains chlorine.

LIQUOR EPISPASTICUS.

Blistering Liquid.

Synonym.—LINIMENTUM CANTHARIDIS.

Take of

Cantharides, in powder . . .	5 ounces.
Acetic Ether	a sufficiency.

Mix the cantharides with 3 fluid ounces of acetic ether; pack in a percolator, and at the expiration of twenty-four hours pour acetic ether over the contents of the percolator, and allow the solution to pass slowly through until 20 fluid ounces are obtained. Keep the liquid in a stoppered bottle.

LIQUOR GUTTA PERCHA.

Solution of Gutta Percha.

Take of

Gutta Percha, in thin slices . .	1 ounce.
Chloroform	8 fluid ounces.
Carbonate of Lead, in fine powder .	1 ounce.

Add the gutta percha to 6 fluid ounces of the chloroform, and shake them together frequently until solution is effected. Then add the carbonate of lead previously mixed with the remainder of the chloroform, and, having several times shaken the whole together, set the mixture aside until the insoluble matter has subsided. Lastly, decant the clear liquid.

This solution is used to make mustard adhere to paper; a much better article for the purpose is a solution of rubber in benzol.

LIQUOR IODI.

Solution of Iodine.

Take of

Iodine	22 grains or 10 parts.
Iodide of Potassium .	33 grains or 15 parts.
Distilled Water sufficient to produce . . .	1 fl. ounce or 200 fl. parts.

Dissolve.

LIQUOR LITHIÆ EFFERVESCENS.

Effervescing Solution of Lithia.

Synonyms.—AQUA LITHIÆ EFFERVESCENS ; LITHIA WATER.

Take of

Carbonate of Lithium	10 grains.
Water	1 pint.

Made by the same process as effervescing solution of potash.

LIQUOR ZINCI CHLORIDI.

Solution of Chloride of Zinc.

Take of

Granulated Zinc	1	pound.
Hydrochloric Acid	44	fluid ounces.
Solution of Chlorine		a sufficiency.
Carbonate of Zinc	½	ounce or a sufficiency.
Distilled Water	1	pint.

Mix the hydrochloric acid and water in a porcelain dish, add the zinc, and apply heat gently, until gas is no longer evolved. Boil for half an hour, supplying the water lost by evaporation, and allow the product to cool.

Test a few drops of the resulting liquid for iron or lead, by adding excess of ammonia and then sulphydrate of ammonium, when a black precipitate is produced if either is present. In the latter case, filter the remainder of the product into a bottle, and add solution of chlorine by degrees, with frequent agitation, until the fluid acquires a permanent odour of chlorine. Add the carbonate of zinc, in small quantities at a time, and with renewed agitation, until a brown sediment appears, and the whole of the iron or lead is thus precipitated. Filter the liquid into a porcelain basin, and evaporate until it is reduced to the bulk of 2 pints.

If no iron or lead be present, filter and evaporate to 2 pints at once.

LOTIONES.

Lotions (2).

Preparations used as local applications, sometimes as washes, but more often kept in constant contact by means of lint or other dressing material.

LOTIO HYDRARGYRI FLAVA.

Yellow Mercurial Lotion.

Take of

Perchloride of Mercury	18 grains or 1 part.
Solution of Lime . .	10 fl. ounces or 243 fl. parts.

Mix.

This is often called Yellow Wash, as it contains a yellow precipitate of mercuric oxide, formed thus :—

$$HgCl_2 + Ca(HO)_2 = HgO + CaCl_2 + H_2O.$$

LOTIO HYDRARGYRI NIGRA.

Black Mercurial Lotion.

Take of

Subchloride of Mercury	30 grains or 1 part.
Solution of Lime . .	10 fl. ounces or 146 fl. parts.

Mix.

This is called Black Wash, as it contains a black precipitate of mercurous oxide.

$$2HgCl + Ca(HO)_2 = Hg_2O + CaCl_2 + H_2O.$$

MELLITA.

Honeys (2).

Syrupy fluids, having a basis of honey.

MEL BORACIS.

Borax Honey.

Take of

Borax, in fine powder	60 grains or 2 parts.
Glycerine	30 grains or 1 part.
Clarified Honey	480 grains or 16 parts.

Mix.

MEL DEPURATUM.

Clarified Honey.

Take of

Honey	5 pounds.

Melt the honey in a water-bath, and strain, while hot, through flannel, previously moistened with warm water.

MISTURÆ.

Mixtures (10).

Combinations of drugs which medical experience has shown to be well suited for their exhibition, and administration.

The majority of the mixtures are emulsions, containing undissolved matter, suspended by means of gum, or some other emulsifying agent.

MISTURA AMMONIACI.

Ammoniacum Mixture.

Take of

Ammoniacum, in coarse powder	$\frac{1}{4}$ ounce or 1 part.
Distilled Water	8 fl. ounces or 32 fl. parts.

Rub smooth with water, and strain.

MISTURA AMYGDALÆ.

Almond Mixture.

Take of

Compound Powder of Almonds	2 oz. or 1 part.
Distilled Water	16 fl. ounces or 8 fl. parts.

Rub the powder with a little of the water into a thin paste, then add the remainder of the water, and strain through muslin. It yields a white emulsion.

The emulsifying agent of this mixture is the emulsin, naturally contained in the almonds. It forms an elegant basis for cough mixtures, but does not keep well.

MISTURA CREASOTI.

Creasote Mixture.

Take of—

Creasote	15 minims.
Glacial Acetic Acid	15 minims or 1 fluid part.
Spirit of Juniper	½ fluid drachm or 2 fluid parts.
Syrup	1 fluid ounce or 32 fluid parts.
Distilled Water	15 fluid ounces or 480 fluid parts.

Mix the creasote with the acetic acid, gradually add the water, and lastly the syrup and spirit of juniper.

The glacial acetic acid is employed as a solvent of the creasote.

MISTURA CRETÆ.

Chalk Mixture.

Take of

Prepared Chalk	¼ ounce or 1 part.
Gum Acacia, in powder	¼ ounce or 1 part.
Syrup	½ fluid ounce or 2 fluid parts.
Cinnamon Water	7½ fluid ounces or 30 fluid parts.

Triturate the chalk and gum acacia with the cinnamon water, then add the syrup, and mix.

This mixture in the summer-time ferments; it can be prevented by using glycerine instead of syrup.

MISTURA FERRI AROMATICA.

Aromatic Mixture of Iron.

Take of

Red Cinchona Bark, in powder	1 ounce.
Calumba Root, in coarse powder	½ ounce.
Cloves, bruised	¼ ounce.
Fine Iron Wire	½ ounce.
Compound Tincture of Cardamoms	3 fluid ounces.
Tincture of Orange Peel	½ fluid ounce.
Peppermint Water	a sufficiency.

Macerate the solids for three days in 12 ounces of the peppermint water; filter, and add the tinctures and more peppermint water to make 16 ounces.

MISTURA FERRI COMPOSITA.

Compound Mixture of Iron.

Take of

Sulphate of Iron	25 grains.
Carbonate of Potassium	30 grains.
Myrrh Refined Sugar	of each 60 grains.
Spirit of Nutmeg	4 fluid drachms.
Rose Water	9½ fluid ounces.

Rub the myrrh, carbonate of potassium, and sugar to a thin paste with a portion of the rose water, then add more rose water, mixed with the spirit of nutmeg, until 8 fluid ounces are obtained, then add the sulphate of iron dissolved in the rest of the rose water, and preserve the mixture from contact with air.

This compound is frequently called "Griffiths' Mixture." On mixing the sulphate of iron and carbonate of potassium, the following chemical decomposition takes place :—

$$FeSO_4 + K_2CO_3 = FeCO_3 + K_2SO_4.$$

The carbonate of iron formed is very unstable, soon losing CO_2, and passing to oxide; the sugar is added to retard this change. During the change the oxide passes from a dull green to a brown colour.

MISTURA GUAIACI.

Guaiacum Mixture.

Take of

Guaiacum Resin . .	of each ½ ounce or 1 part.
Refined Sugar . .	
Gum Acacia, powdered .	¼ ounce or ½ part.
Cinnamon Water . . .	1 pint or 40 fluid parts.

Triturate the guaiacum with the sugar and the gum, adding gradually the cinnamon water.

MISTURA SCAMMONII.

Scammony Mixture.

Take of

Scammony, in powder .	6 grains or 1 part.
Milk	2 fl. ounces or 146 fl. parts.

Triturate the scammony with the milk, until a uniform emulsion is obtained. The mixture should be made as required for use, as it rapidly becomes sour.

MISTURA SENNÆ COMPOSITA.

Compound Mixture of Senna.

Synonym.—BLACK DRAUGHT.

Take of

Sulphate of Magnesium .	4 ounces or 4 parts.
Liquid Extract of Liquorice	1 ounce or 1 fl. part.
Tincture of Senna . .	2½ fl. ounces or 2½ fl. parts.
Compound Tincture of Cardamoms . .	1½ fl. ounces or 1½ fl. parts.
Infusion of Senna . .	15 fl. ounces or 15 fl. parts.

Dissolve the sulphate of magnesium in the infusion of senna with the aid of a little heat, then add the liquid extract and the tinctures.

MISTURA SPIRITUS VINI GALLICI.

Mixture of French Brandy.

Take of

French Brandy	of each 4 fluid ounces.
Cinnamon Water . . .	
The Yolks of Two Eggs.	
Refined Sugar	½ ounce.

Rub the yolks and sugar together, then add the cinnamon water and spirit.

MUCILAGINES.

Mucilages (3).

These are viscous adhesive preparations of a colloid nature used to suspend powders in mixtures, likewise to emulsify oils and resins.

MUCILAGO ACACIÆ.

Mucilage of Gum Acacia.

Take of

Gum Acacia, in small pieces	4 ounces or 2 parts.
Distilled Water . . .	6 fl. ounces or 3 fl. parts.

Dissolve and strain.

MUCILAGO AMYLI.

Mucilage of Starch.

Take of

Starch . . .	120 grains or 24 parts.
Distilled Water .	10 fluid ounces or 875 fl. parts.

Triturate the starch with the water, gradually added, then boil for a few minutes, constantly stirring.

MUCILAGO TRAGACANTHÆ.

Mucilage of Tragacanth.

Take of

Tragacanth, in powder .	60 grains or 12 parts.
Distilled Water . .	10 fl. ounces or 875 fl. parts.
Rectified Spirit . .	2 fl. drachms or 22 fluid parts.

Mix the tragacanth with the spirit; then pour in the water, with constant agitation.

The object of the spirit is to divide the particles of tragacanth, so that the water may penetrate and yield a solution rapidly; for the success of the operation dexterity is required.

OLEATA.

Oleates (2).

These are combinations of bases with oleic acid. In addition to the official processes, they can be made by adding a soluble salt, dissolved in water, to an aqueous solution of soap. For example: sulphate of copper and oleate of sodium would give insoluble oleate of copper and soluble sulphate of sodium.

The student should remember that lead plaster is an oleate of lead.

OLEATUM HYDRARGYRI.

Oleate of Mercury.

Take of

Yellow Oxide of Mercury .	1 ounce or 1 part.
Oleic Acid	9 ounces or 9 parts.

To the oleic acid, kept stirred in a mortar, add gradually the oxide of mercury, and triturate occasionally until it is all dissolved.

This oleate may be prepared with half the above proportion of oleic acid, the remainder being added just before, or not long before, the oleate is dispensed.

By age it darkens, and slowly separates metallic mercury.

OLEATUM ZINCI.

Oleate of Zinc.

Take of

Oxide of Zinc	1 ounce or 1 part.
Oleic Acid	9 ounces or 9 parts.

Stir the oxide with the oleic acid, and allow the mixture to stand for two hours; then heat on a water-bath until the oxide is dissolved.

OLEUM PHOSPHORATUM.

Phosphorated Oil.

For convenience' sake, phosphorated oil is best considered here. It is the only medicated oil of the British Pharmacopœia group of oils.

Take of

Phosphorus	of each a sufficiency.
Oil of Almonds	

Heat the oil in a porcelain dish to about 300° F., and keep it at this temperature for about fifteen minutes; then let it cool, and filter it through paper. Put 4 fluid ounces of this oil into a stoppered bottle, capable of holding 4½ fluid ounces, and add to it 16 grains of pure dry phosphorus. Immerse the bottle in hot water until the oil has acquired the temperature of 180° F., removing the stopper two or three times to allow the escape of expanded air; then shake the oil and phosphorus together, until the latter is entirely dissolved.

In the first part of the above process the high temperature removes traces of moisture and albuminous organic matter, which, if allowed to remain, cause oxidation of the phosphorus. One fluid ounce contains 4 grains of phosphorus.

OLEO-RESINA.

Oleo-Resins.

Several of these are official (see p. 106). They are all natural exudations, except the following:—

OLEO-RESINA CUBEBÆ.

Oleo-Resin of Cubebs.

Take of

Cubebs, in coarse powder	2 pounds.
Ether	4 pints, or a sufficiency.

Percolate with the ether till exhausted. Distil off the ether, allow the residue to stand in a closed vessel until it ceases to deposit waxy or crystalline matter (cubebin). Decant the oleo-resin.

OXYMELLITA (2).

These are fluids of syrupy consistence, containing both honey and acetic acid.

OXYMEL.

Oxymel.

Take of

Clarified Honey . .	40 ounces or 8 parts.
Acetic Acid . . .	5 fl. ounces or 1 fl. part.
Distilled Water . .	5 fl. ounces or 1 fl. part.

Liquefy the honey by heat; then mix with the acetic acid and water.

OXYMEL SCILLÆ.

Oxymel of Squills.

Take of

Vinegar of Squills . .	1 pint or 5 fluid parts.
Clarified Honey . . .	2 pounds or 8 parts.

Mix, and evaporate by a water-bath until the product, when cold, shall have a specific gravity of 1·32.

PILULÆ.

Pills (21).

Pills are globular preparations, designed for the exhibition of nauseous remedies, as also those insoluble in water.

The following is the general order of pill-mixing: All solid or dry ingredients intended to form part of a pill should be finely divided and intimately mixed before being made into the pill-mass. If an essential oil is to form part of the pill, mix it well with the dry powders; lastly, add what is called the excipient, and incorporate thoroughly.

The excipient of a pill is that part which gives adhesion to the other ingredients, enabling the pill to form a compact firm mass, retaining well its rounded form. The chief official excipients are: confection of rose, treacle, glycerine, water. The latter should be used with much caution, or the result will be a soft spoilt mess. Some materials require special excipients to get them into the pill form; for example, croton oil or creasote should be mixed with dry powdered soap and a little glycerine of tragacanth; nitrate or oxide of silver with compound tragacanth powder and a little water. If pill-masses have become hard, they can generally be softened by rubbing them in a warm mortar.

The following pills have treacle as the excipient: Pil. Asafœtidæ Co., Pil. Conii Co., Pil. Ipecacuanhæ c. Scilla, Pil. Scillæ Co.

The following pills have glycerine and treacle as an excipient: Pil. Aloes c. Myrrha, Pil. Rhei Co.

Pills with water as an excipient: Pil. Colocynthidis Co., Pil. Ferri Iodidi.

Pills with spirits of wine as an excipient: Pil. Scammonii Co., Pil. Phosphori.

Pills with confection of roses as the excipient: Pil. Aloes et Asafœtidæ, Pil. Aloës et Ferri, Pil. Aloes Barbadensis, Pil. Aloes Socotrinæ, Pil. Ferri Carbonatis, Pil. Hydrargyri, Pil. Plumbi cum Opio.

Pills with special excipients: Syrup in Pil. Cambogiæ Co., glycerine in Pil. Saponis Co., castor-oil in Pil. Hydrargyri Subchloridi Co.

PILULA ALOES BARBADENSIS.

Pill of Barbadoes Aloes.

Take of

Barbadoes Aloes, in powder	2 ounces or 16 parts.
Hard Soap, in powder	1 ounce or 8 parts.
Oil of Caraway	1 fl. drachm or 1 fl. part.
Confection of Roses	1 ounce or 8 parts.

Beat all together until thoroughly mixed.

PILULA ALOES ET ASAFŒTIDÆ.

Pill of Aloes and Asafœtida.

Take of

Socotrine Aloes, in powder	1 ounce or 1 part.
Asafœtida	1 ounce or 1 part.
Hard Soap, in powder	1 ounce or 1 part.
Confection of Roses	about 1 ounce, 1 part, or a sufficiency.

Beat all together until thoroughly mixed.

PILULA ALOES ET FERRI.

Pill of Aloes and Iron.

Take of

Sulphate of Iron	$1\frac{1}{2}$ ounce or $1\frac{1}{2}$ part.
Barbadoes Aloes, in powder	2 ounces or 2 parts.
Compound Powder of Cinnamon	3 ounces or 3 parts.
Confection of Roses	4 ounces or 4 parts.

Reduce the sulphate of iron to powder, rub it with the aloes and compound powder of cinnamon, and adding the confection, make the whole into a uniform mass.

PILULA ALOES ET MYRRHÆ.

Pill of Aloes and Myrrh.

Take of

Socotrine Aloes	2 ounces or 2 parts.
Myrrh	1 ounce or 1 part.
Saffron, dried	½ ounce or ½ part.
Treacle	1 ounce or 1 part.
Glycerine	a sufficiency.

Triturate the aloes, myrrh, and saffron together; then add the treacle and sufficient glycerine, about ¼ ounce, and beat them together into a uniform mass.

PILULA ALOES SOCOTRINÆ.

Pill of Socotrine Aloes.

Take of

Socotrine Aloes, in powder.	2 ounces or 16 parts.
Hard Soap, in powder	1 ounce or 8 parts.
Volatile Oil of Nutmeg	1 fl. drachm or 1 fl. part.
Confection of Roses	1 ounce or 8 parts.

Beat all together, until thoroughly mixed.

PILULA ASAFŒTIDÆ COMPOSITA.

Compound Pill of Asafœtida.

Synonym.—PILULA GALBANI COMPOSITA.

Take of

Asafœtida	of each 2 ounces or 2 parts.
Galbanum	
Myrrh	
Treacle, by weight	1 ounce or 1 part.

Heat all together by means of a water-bath, and stir the mass until it assumes a uniform consistence.

PILULA CAMBOGIÆ COMPOSITA.

Compound Pill of Gamboge

Take of

Gamboge, in powder . .	1 ounce or 1 part.
Barbadoes Aloes, in powder .	1 ounce or 1 part.
Compound Powder of Cinnamon	1 ounce or 1 part.
Hard Soap, in powder . .	2 ounces or 2 parts.
Syrup	a sufficiency.

Beat into a pill-mass.

PILULA COLOCYNTHIDIS COMPOSITA.

Compound Pill of Colocynth.

Take of

Colocynth Pulp, in powder .	1 ounce or 4 parts.
Barbadoes Aloes, in powder .	2 ounces or 8 parts.
Resin of Scammony, in powder	1 ounce or 1 part.
Sulphate of Potassium, in powder	$\frac{1}{4}$ ounce or 1 part.
Oil of Cloves	2 fl. drachms or 1 fl. part.
Distilled Water . . .	a sufficiency.

Mix the powders, add the oil of cloves, and beat into a mass with the aid of the water.

PILULA COLOCYNTHIDIS ET HYOSCYAMI.

Pill of Colocynth and Henbane.

Take of

Compound Pill of Colocynth .	2 ounces or 2 parts.
Extract of Henbane . . .	1 ounce or 1 part.

Beat them into a uniform mass.

PILULA CONII COMPOSITA.

Compound Pill of Hemlock.

Take of

Extract of Hemlock . .	2½ ounces or 5 parts.
Ipecacuanha, in powder . .	½ ounce or 1 part.
Treacle	a sufficiency.

Mix the extract of hemlock and ipecacuanha, and add sufficient treacle to form a pill-mass.

PILULA FERRI CARBONATIS.

Pill of Carbonate of Iron.

Take of

Saccharated Carbonate of Iron .	1 ounce or 4 parts.
Confection of Roses . . .	¼ ounce or 1 part.

Beat them into a uniform mass.

PILULA FERRI IODIDI.

Pill of Iodide of Iron.

Take of

Fine Iron Wire . .	40 grains or 40 parts.
Iodine . . .	80 grains or 80 parts.
Refined Sugar, in powder	70 grains or 70 parts.
Liquorice Root, in powder	140 grains or 140 parts.
Distilled Water . .	50 minims or 46 fluid parts.

Agitate the iron with the iodine and the water in a strong, stoppered, ounce phial, until the froth becomes white. Pour the fluid upon the sugar in a mortar, triturate briskly, and gradually add the liquorice.

These pills should be preserved from light and air as much as possible.

PILULA HYDRARGYRI.

Mercurial Pill.

Synonym.—BLUE PILL.

Take of

Mercury, by weight . . .	2 ounces or 2 parts.
Confection of Roses . .	3 ounces or 3 parts.
Liquorice Root, in fine powder	1 ounce or 1 part.

Rub the mercury with the confection of roses until metallic globules are no longer visible; then add the liquorice, and mix the whole well together.

PILULA HYDRARGYRI SUBCHLORIDI COMPOSITA.

Compound Pill of Subchloride of Mercury.

Synonym.—PILULA CALOMELANOS COMPOSITA.

Take of

Subchloride of Mercury . .	1 ounce or 1 part.
Sulphurated Antimony . .	1 ounce or 1 part.
Guaiacum Resin, in powder .	2 ounces or 2 parts.
Castor Oil	1 fl. ounce, 1 fl. part, or a sufficiency.

Beat into a uniform pill-mass.

PILULA IPECACUANHÆ CUM SCILLA.

Pill of Ipecacuanha with Squill.

Take of

Compound Powder of Ipecacuanha	3 ounces or 3 parts.
Squill, in powder . . .	1 ounce or 1 part.
Ammoniacum, in powder .	1 ounce or 1 part.
Treacle	a sufficiency.

Mix the powders, and beat into a mass with the treacle.

PILULA PHOSPHORI.

Phosphorus Pill.

Take of

Phosphorus	3 grains.
Balsam of Tolu	120 grains.
Yellow Wax	57 grains.
Curd Soap	90 grains.

Put the phosphorus and balsam of Tolu into a mortar about half full of hot water, and when the phosphorus has melted, and the balsam has become sufficiently soft, rub them together beneath the surface of the water until no particles of phosphorus are visible, the temperature of the water being maintained at, or near to, 140° F. Add now the wax, and as it softens mix it thoroughly with the other ingredients. Allow the mass to cool without being exposed to the air, and keep it immersed in cold water in a bottle.

When dispensed, every 2 grains of the product are to be incorporated with 1 grain of the soap, a few drops of rectified spirit being used, if necessary, to soften the whole.

Three grains of the mass so produced, including the soap, will contain $\frac{1}{30}$ grain of phosphorus (B.P.).

Note.—The above pill contains nearer $\frac{1}{35}$ grain of phosphorus in 3 grains of mass, as the balsam of Tolu becomes hydrated to about the extent of 20 per cent.; this hydration has not been calculated for in the Pharmacopœia.

PILULA PLUMBI CUM OPIO.

Pill of Lead and Opium.

Take of

Acetate of Lead, in fine powder .	36 grains or 6 parts.
Opium, in powder . . .	6 grains or 1 part.
Confection of Roses . . .	6 grains or 1 part.

Beat them into a uniform mass.

PILULA RHEI COMPOSITA.

Compound Rhubarb Pill.

Take of

Rhubarb Root, in powder	3 ounces or 6 parts.
Socotrine Aloes, in powder	2¼ ounces or 4½ parts.
Myrrh, in powder	1½ ounce or 3 parts.
Hard Soap, in powder	1½ ounce or 3 parts.
Oil of Peppermint	1½ fl. drachm or ⅓ part.
Glycerine	1 ounce or 2 parts.
Treacle, by weight	about 3 ozs. or 6 parts.

Mix the powders with the oil, then add the glycerine and sufficient treacle, and beat the whole into a uniform mass.

Martindale has pointed out that half the above quantity of glycerine alone is sufficient to make the mass; also that treacle or syrup yields a much better article.

PILULA SAPONIS COMPOSITA.

Compound Pill of Soap.

Synonym.—PILULA OPII.

Take of

Opium, in powder	½ ounce or 1 part.
Hard Soap, in powder	2 ounces or 4 parts.
Glycerine	a sufficiency.

Mix the opium and soap, and beat into a uniform mass with the glycerine.

These pills soon get damp and soft through the glycerine taking up water. Water was the old excipient, and answers its purpose very well.

PILULA SCAMMONII COMPOSITA.

Compound Scammony Pill.

Take of

Resin of Scammony	1 ounce or 1 part.
Resin of Jalap	1 ounce or 1 part.
Curd Soap, in powder	1 ounce or 1 part.
Strong Tincture of Ginger	1 fl. ounce or 1 fl. part.
Rectified Spirit	2 fl. ounces or 2 fl. parts.

Add the spirit and tincture to the soap and resins, and dissolve with the aid of a little heat; then evaporate the spirit by the heat of a water-bath until the mass has acquired a suitable consistence for forming pills.

PILULA SCILLÆ COMPOSITA.

Compound Squill Pill.

Take of

Squill, in powder . . .	1¼ ounce or 1¼ part.
Ginger, in powder . . .	1 ounce or 1 part.
Ammoniacum, in powder .	1 ounce or 1 part.
Hard Soap, in powder . .	1 ounce or 1 part.
Treacle, by weight . .	2 ounces, 2 parts, or a sufficiency.

Beat into a uniform pill mass.

PULVERES.

Powders (15).

The official powders are mixtures of various drugs, in a fine or impalpable state of division. The general instructions for preparing them are: "Mix thoroughly, pass the powder through a fine sieve, and finally rub it lightly in a mortar."

When an ounce or two of powder has to be mixed, the pestle and mortar usually suffices; but when the quantity is above 4 ounces, a sieve should be used in addition. The order of mixing should be to place small quantities in the mortar first, and gradually dilute them with the larger quantities, stirring well meanwhile.

PULVIS AMYGDALÆ COMPOSITUS.

Compound Powder of Almonds.

Take of

Sweet Almonds	8 ounces or 8 parts.
Refined Sugar, in powder .	4 ounces or 4 parts.
Gum Acacia, in powder . .	1 ounce or 1 part.

Steep the almonds in water until their skins can easily be removed; and, when blanched, dry them thoroughly with a soft cloth, and rub them lightly in a mortar to a smooth consistence. Mix the gum and the sugar; and, adding them to the almond pulp gradually, rub the whole to a coarse powder. Keep it in a lightly-covered jar.

It is best freshly made, as it soon goes rancid.

PULVIS ANTIMONIALIS.

Antimonial Powder.

Take of

Oxide of Antimony . .	1 ounce or 1 part.
Phosphate of Calcium . .	2 ounces or 2 parts.

Mix them thoroughly.

This is said to be an imitation of a once popular patent medicine, known as "James's Fever Powder."

PULVIS CATECHU COMPOSITUS.

Compound Powder of Catechu.

Take of

Catechu, in powder . .	4 ounces or 4 parts.
Kino, in powder . . .	2 ounces or 2 parts.
Rhatany Root, in powder .	2 ounces or 2 parts.
Cinnamon Bark, in powder .	1 ounce or 1 part.
Nutmeg, in powder . .	1 ounce or 1 part.

PULVIS CINNAMOMI COMPOSITUS.

Compound Powder of Cinnamon.

Synonym.—PULVIS AROMATICUS.

Take of

Cinnamon Bark, in powder . .	1 ounce or 1 part.
Cardamom Seeds, in powder .	1 ounce or 1 part.
Ginger, in powder . . .	1 ounce or 1 part.

PULVIS CRETÆ AROMATICUS.

Aromatic Powder of Chalk.

Synonym.—Confectio Aromatica.

Take of

Cinnamon Bark, in powder	4	ounces or 4 parts.
Nutmeg, in powder	3	ounces or 3 parts.
Saffron, in powder	3	ounces or 3 parts.
Cloves, in powder	1½	ounce or 1½ part.
Cardamom Seeds, in powder	1	ounce or 1 part.
Refined Sugar, in powder	25	ounces or 25 parts.
Prepared Chalk	11	ounces or 11 parts.

If a product of bright colour be desired, the saffron may previously be moistened and triturated with a little water or spirit, or the fresh and faintly damp mixture may be subjected to considerable pressure in the triturating process.

PULVIS CRETÆ AROMATICUS CUM OPIO.

Aromatic Powder of Chalk and Opium.

Take of

Aromatic Powder of Chalk	9¾	ounces or 39 parts.
Opium, in powder	¼	ounce or 1 part.

PULVIS ELATERINI COMPOSITUS.

Compound Powder of Elaterin.

Take of

Elaterin	5	grains or 1 part.
Sugar of Milk	195	grains or 39 parts.

Rub them together in a mortar until they are reduced to fine powder and intimately mixed

PULVIS GLYCYRRHIZÆ COMPOSITUS.

Compound Powder of Liquorice.

Synonym.—PULVIS GLYCYRRHIZÆ COMPOSITUS CUM SULPHURE.

Take of

Senna, in fine powder	2 ounces or 2 parts.
Liquorice Root, in fine powder	2 ounces or 2 parts.
Fennel Fruit, in fine powder	1 ounce or 1 part.
Sublimed Sulphur	1 ounce or 1 part.
Refined Sugar, in powder	6 ounces or 6 parts.

PULVIS IPECACUANHÆ COMPOSITUS.

Compound Powder of Ipecacuanha.

Take of

Ipecacuanha, in powder	½ ounce or 1 part.
Opium, in powder	½ ounce or 1 part.
Sulphate of Potassium, in powder	4 ounces or 8 parts.

This is commonly known as Dover's Powder. The sulphate of potash acts as a diluent, helping to divide the active opium and ipecacuanha.

PULVIS JALAPÆ COMPOSITUS.

Compound Powder of Jalap.

Take of

Jalap, in powder	5 ounces or 5 parts.
Acid Tartrate of Potassium	9 ounces or 9 parts.
Ginger, in powder	1 ounce or 1 part.

PULVIS KINO COMPOSITUS.

Compound Powder of Kino.

Take of

Kino, in powder	3¾ ounces or 15 parts.
Opium, in powder	¼ ounce or 1 part.
Cinnamon Bark, in powder	1 ounce or 4 parts

PULVIS OPII COMPOSITUS.

Compound Powder of Opium.

Take of

Opium, in powder	1½ ounce or 3 parts.
Black Pepper, in powder	2 ounces or 4 parts.
Ginger, in powder	5 ounces or 10 parts.
Caraway Fruit, in powder	6 ounces or 12 parts.
Tragacanth, in powder	½ ounce or 1 part.

PULVIS RHEI COMPOSITUS.

Compound Powder of Rhubarb.

Synonym.—GREGORY'S POWDER.

Take of

Rhubarb Root, in powder	2 ounces or 2 parts.
Light Magnesia	6 ounces or 6 parts.
Ginger, in powder	1 ounce or 1 part.

The more free the powdered rhubarb is from oil, and the more recently prepared the magnesia, the more readily will the powder mix with water. If a more condensed powder be desired, heavy magnesia may be employed.

PULVIS SCAMMONII COMPOSITUS.

Compound Powder of Scammony.

Take of

Scammony Resin, in powder	4 ounces or 4 parts.
Jalap, in powder	3 ounces or 3 parts.
Ginger, in powder	1 ounce or 1 part.

PULVIS TRAGACANTHÆ COMPOSITUS.

Compound Powder of Tragacanth.

Take of

Tragacanth, in powder	of each 1 ounce or 1 part.
Gum Acacia	
Starch, in powder	
Refined Sugar, in powder	3 ounces or 3 parts.

SPIRITUS.

Spirits (18).

These are chiefly alcoholic solutions of essential oils, rectified spirit being the general solvent, 1 volume of the essential oil being added to 49 volumes of spirit. Spirits of camphor is a notable exception; it is made with 1 ounce of camphor and 9 fluid ounces of rectified spirit.

In dispensing the official spirits most of them will give a turbidity with water, due to separation of oil.

SPIRITUS ÆTHERIS.

Spirit of Ether.

Take of

Ether	10 fluid ounces.
Rectified Spirit	1 pint.

Mix.

Test.—Specific gravity 0·809.

SPIRITUS ÆTHERIS COMPOSITUS.

Compound Spirit of Ether.

Synonym.—HOFFMAN'S ANODYNE.

Gradually mix 36 fluid ounces of sulphuric acid with 40 fluid ounces of rectified spirit, and let the mixture stand for twenty-four hours. Then distil until the fluid in the retort begins to blacken. Shake the distillate with lime-water to neutralise any acid, remove the supernatant liquor, and expose it to the air for about twelve hours. Pour 3 fluid drachms of the resulting liquid (ethereal oil) into a mixture of 8 fluid ounces of ether and 16 fluid ounces of rectified spirit.

SPIRITUS ÆTHERIS NITROSI.

Spirit of Nitrous Ether.

Synonym.—SPIRITUS ÆTHERIS NITRICI.

A spirituous solution, containing nitrous compounds, aldehyd, and other substances. It may be obtained as follows:—

Take of

Nitric Acid	3 fluid ounces.
Sulphuric Acid	2 fluid ounces.
Copper, in fine wire (about No. 25) .	2 ounces.
Rectified Spirit	a sufficiency.

To 1 pint of the spirit add gradually the sulphuric acid, stirring them together; then add, in the same way, 2½ fluid ounces of the nitric acid. Put the mixture into a retort or flask, into which the copper has been introduced, and to which a thermometer is fitted. Attach now an efficient condenser, and, applying heat gently, let the spirit distil at a temperature commencing at 170° F., and rising to 175° F., but not exceeding 180° F., until 12 fluid ounces have passed over and been collected in a bottle, the latter and the condenser being kept cool with ice-cold water; then withdraw the heat, and having allowed the contents of the retort to cool, introduce the remaining ½ ounce of nitric acid, and resume the distillation as before, until the distilled product has been increased to 14 fluid ounces. Mix this with 2 pints of the rectified spirit, or as much as will make the product correspond to the nitric oxide test alluded to on page 95. Preserve the produce in thoroughly well-closed vessels.

SPIRITUS AMMONIÆ AROMATICUS.

Aromatic Spirit of Ammonia.

Synonyms.—SPIRITUS AMMONIÆ COMPOSITUS; SAL VOLATILE.

Take of

Carbonate of Ammonium . .	4 ounces.
Strong Solution of Ammonia .	8 fluid ounces.
Volatile Oil of Nutmeg . .	4½ fluid drachms.
Oil of Lemon	6½ fluid drachms.
Rectified Spirit	6 pints.
Water	3 pints.

Place the oils of lemon and nutmeg and rectified spirit with the water in a retort; distil 7 pints, and then distil and separately collect an additional 9 fluid ounces. Place the 9 ounces of distillate, together with the carbonate of ammonium and the strong solution of ammonia, in a bottle holding rather more than 1 pint. Securely cork the bottle, and gently warm it in a water-bath to 140° F., shaking from time to time until all the salt has dissolved. Filter, if necessary, when cold through a little cotton wool, and gradually mix it with the 7 pints of distilled spirit. The product should measure 1 gallon.

This spirit contains carbonate of ammonium, and free ammonia.

Tests.—Specific gravity, 0·896. One fluid ounce requires, for neutralisation, 558 grain-measures of the official volumetric solution of oxalic acid. One fluid ounce, after the addition of 330 grain-measures of the test solution of chloride of barium, should yield, after filtration, a further precipitate when more of the reagent is added.

SPIRITUS AMMONIÆ FŒTIDUS.

Fetid Spirit of Ammonia.

Take of

Asafœtida	$1\frac{1}{2}$ ounce.
Strong Solution of Ammonia .	2 fluid ounces.
Rectified Spirit	a sufficiency.

Break the asafœtida into small pieces, and macerate it in a closed vessel in 15 fluid ounces of the spirit for twenty-four hours; then distil off the spirit, mix the product with the solution of ammonia, and add sufficient rectified spirit to make 1 pint.

Test.—Specific gravity about 0·847.

SPIRITUS ARMORACIÆ COMPOSITUS.

Compound Spirit of Horseradish.

Take of

Horseradish Root, scraped	of each 20 ounces.
Bitter-Orange Peel, cut small and bruised	
Nutmeg, bruised	½ ounce.
Proof Spirit	1 gallon.
Water	3 pints.

Mix, and distil a gallon.

Test.—Specific gravity about 0·920.

SPIRITUS CAJUPUTI.

Spirit of Cajuput.

Take of

Oil of Cajuput	1 fluid ounce.
Rectified Spirit	49 fluid ounces.

Dissolve.

SPIRITUS CAMPHORÆ.

Spirit of Camphor.

Take of

Camphor	1 ounce.
Rectified Spirit	9 fluid ounces.

Dissolve.

Test.—Specific gravity about 0·850.

SPIRITUS CHLOROFORMI.

Spirit of Chloroform.

Synonyms.—CHLORIC ETHER; SPIRIT OF CHLORIC ETHER.

Take of

Chloroform	1 fluid ounce.
Rectified Spirit	19 fluid ounces.

Dissolve.

Test.—Specific gravity 0·871.

SPIRITUS CINNAMOMI.

Spirit of Cinnamon.

Take of

Oil of Cinnamon	1 fluid ounce.
Rectified Spirit	49 fluid ounces.

Dissolve.

SPIRITUS JUNIPERI.

Spirit of Juniper.

Take of

Oil of Juniper	1 fluid ounce.
Rectified Spirit	49 fluid ounces.

Dissolve.

Preparation.—Mistura Creasoti.

SPIRITUS LAVANDULÆ.

Spirit of Lavender.

Take of

Oil of Lavender	1 fluid ounce.
Rectified Spirit	49 fluid ounces.

Dissolve.

SPIRITUS MENTHÆ PIPERITÆ.

Spirit of Peppermint.

Take of

Oil of Peppermint	1 fluid ounce.
Rectified Spirit	49 fluid ounces.

Dissolve.

SPIRITUS MYRISTICÆ.

Spirit of Nutmeg.

Take of

Volatile Oil of Nutmeg	1 fluid ounce.
Rectified Spirit	49 fluid ounces.

Dissolve.

SPIRITUS RECTIFICATUS.

Rectified Spirit.

Alcohol, C_2H_5HO, with 16 per cent. of water. Obtained by the distillation of fermented saccharine fluids. (*Vide* page 91.)

This spirit is one of the chief solvents used in pharmacy. Its use is indicated where resins, essential oils, oleo-resins, and balsams have to be dissolved, as in making many of the rectified spirit tinctures.

Sometimes it is used as a precipitant, as in preparing granulated sulphate of iron. It also precipitates albuminous and gummy matters in making some of the liquid extracts, but in the latter case its chief value is as a preservative.

SPIRITUS ROSMARINI.

Spirit of Rosemary.

Take of

Oil of Rosemary	1 fluid ounce.
Rectified Spirit	49 fluid ounces.

Dissolve.

SPIRITUS TENUIOR.

Proof Spirit.

Take of

Rectified Spirit	5 pints.
Distilled Water	3 pints.

Mix.

When mixed, the above does not give 8 volumes, as there is a loss by condensation, 6 of the spirit and 10 of the water giving 15½ volumes of the mixture.

Test.—It has a specific gravity of 0·920, and contains about 49 per cent. by weight, and 57 per cent. by volume, of absolute alcohol.

SPIRITUS VINI GALLICI.

French Brandy.

Spirit distilled from French wine. It has a characteristic flavour, and a light sherry colour, derived from the cask in which it has been kept.

SUCCI.

Juices (7).

Liquids expressed from fresh plants, or parts of plants after bruising. The first five are preserved from change by the addition of 1 volume of rectified spirit for each 3 volumes of juice. After standing seven days they are filtered.

SUCCUS BELLADONNÆ.

Juice of Belladonna.

Take of

Fresh Leaves and young Branches of Belladonna	7 pounds.
Rectified Spirit	a sufficiency.

SUCCUS CONII.

Juice of Hemlock.

Take of

Fresh Leaves and young Branches of Hemlock	7 pounds.
Rectified Spirit	a sufficiency.

SUCCUS HYOSCYAMI.

Juice of Henbane.

Take of

Fresh Leaves, Flowering Tops, and young Branches of Henbane	7 pounds.
Rectified Spirit	a sufficiency.

SUCCUS SCOPARII.

Juice of Broom.

Take of

Fresh Broom Tops	7 pounds.
Rectified Spirit	a sufficiency.

SUCCUS TARAXACI.

Juice of Dandelion.

Take of

Fresh Dandelion Root	7 pounds.
Rectified Spirit	a sufficiency.

SUCCUS LIMONIS.

Lemon Juice.

The freshly-expressed juice of the lemon. It contains 36 to 46 grains of citric acid in each ounce.

SUCCUS MORI.

Mulberry Juice.

The juice of the ripe fruit of the mulberry.

SUPPOSITORIA.

Suppositories (8).

These are conical-shaped solids intended for administering medicines by way of the rectum. The official suppositories are of two kinds—those containing oil of theobroma as a basis, and those having a mixture of soap, starch, and glycerine as a basis. The former are most appreciated, as they dissolve easily, the soap variety being insoluble at the temperature of the body.

Oil of theobroma is chosen as a basis in preference to all other fats, by reason of its having a wax-like solidity, and low melting-point. It melts easily at the temperature of the human body, and besides, it has good keeping qualities.

Suppositories with Soap.

All these are made by the same general process, as follows: "Mix the ingredients so as to form a paste of suitable consistence. Divide the mass into twelve equal parts, each of which is to be made into a conical or other convenient form for a suppository."

SUPPOSITORIA ACIDI CARBOLICI CUM SAPONE.

Carbolic Acid Suppositories.

Take of

Carbolic Acid . . .	12 grains.
Curd Soap, in powder .	180 grains.
Glycerine of Starch . .	40 grains or a sufficiency.

To make twelve. Each suppository contains 1 grain of carbolic acid.

SUPPOSITORIA ACIDI TANNICI CUM SAPONE.

Tannic Acid Suppositories with Soap.

Take of

Tannic Acid	36 grains.
Glycerine of Starch	30 grains.
Curd Soap, in powder . . .	100 grains.
Starch, in powder	a sufficiency.

To make twelve. Each suppository contains 3 grains of tannic acid.

SUPPOSITORIA MORPHINÆ CUM SAPONE.

Morphine Suppositories with Soap.

Take of

Hydrochlorate of Morphine . .	6 grains.
Glycerine of Starch	30 grains.
Curd Soap, in powder . . .	100 grains.
Starch, in powder	a sufficiency.

To make twelve. Each suppository contains $\frac{1}{2}$ grain of hydrochlorate of morphine.

Suppositories with Oil of Theobroma.

To give the proper form to these suppositories, the oil of theobroma is fused at a low temperature, and thoroughly mixed with the other ingredients; the mixture is then poured, while still fluid, into gun-metal moulds of the capacity of 15 grains, and allowed to cool. Ice-cold water is a great assistance in suppository making, as it keeps the mould cool, causing rapid contraction of the fat, and easy removal of the cones.

SUPPOSITORIA ACIDI TANNICI.

Tannic Acid Suppositories.

Take of

Tannic Acid	36 grains.
Oil of Theobroma	144 grains.

To make twelve. Each suppository contains 3 grains of tannic acid.

SUPPOSITORIA HYDRARGYRI.

Mercurial Suppositories.

Take of

Ointment of Mercury . . .	60 grains.
Oil of Theobroma	120 grains.

To make twelve. Each suppository contains 5 grains of ointment of mercury.

SUPPOSITORIA IODOFORMI.

Iodoform Suppositories.

Take of

Iodoform, in powder . . .	36 grains.
Oil of Theobroma	144 grains.

To make twelve. Each suppository contains 3 grains of iodoform.

SUPPOSITORIA MORPHINÆ.

Morphine Suppositories.

Take of

Hydrochlorate of Morphine	6 grains
Oil of Theobroma	174 grains.

To make twelve. Each suppository contains ½ grain of hydrochlorate of morphine.

SUPPOSITORIA PLUMBI COMPOSITA.

Compound Lead Suppositories.

Take of

Acetate of Lead	36 grains.
Opium, in powder	12 grains.
Oil of Theobroma	132 grains.

To make twelve. Each suppository contains 1 grain of opium and 3 grains of lead acetate.

SYRUPI.

Syrups (17).

Syrups are strong watery solutions of sugar, containing either medicinal or flavouring agents. In the case of the two iron syrups the sugar is used mainly as a preservative, keeping the iron salts from oxidising.

The syrups of squill and lemon contain acids, hence are to some extent incompatible with alkalies.

It is a good rule in making syrups to use as little heat as possible, as over-heated syrups are prone to crystallise.

SYRUPUS.

Syrup.

Take of

Refined Sugar	5 pounds.
Distilled Water	2 pints.

Dissolve the sugar in the water with the aid of heat; and add, after cooling, as much distilled water as may be necessary to make the weight of the product 7½ pounds. The specific gravity should be 1·330.

SYRUPUS AURANTII.

Syrup of Orange Peel.

Take of

Tincture of Orange Peel	1 fluid ounce.
Syrup	7 fluid ounces.

Mix. The specific gravity should be about 1·282.

SYRUPUS AURANTII FLORIS.

Syrup of Orange Flower.

Take of

Orange Flower Water	8 fluid ounces.
Refined Sugar	3 pounds.
Distilled Water	16 fl. ounces or a sufficiency.

Dissolve the sugar in the distilled water by means of heat; strain, and when nearly cold add the orange-flower water, with a sufficient quantity of distilled water, if necessary, to make the product 4½ pounds. The specific gravity should be about 1·330.

SYRUPUS CHLORAL.

Syrup of Chloral.

Take of

Hydrate of Chloral	80 grains.
Distilled Water	1½ fluid drachm.
Simple Syrup	a sufficiency.

Dissolve the hydrate of chloral in the water, and add the syrup until the mixed product measures 1 fluid ounce. The specific gravity should be about 1·320.

Contains 10 grains of hydrate of chloral in 1 fluid drachm.

SYRUPUS FERRI IODIDI.

Syrup of Iodide of Iron.

Take of

Iron	1 ounce.
Iodine	2 ounces.
Refined Sugar	28 ounces.
Distilled Water	13 fluid ounces.

Prepare a syrup by dissolving the sugar in 10 ounces of the water with the aid of a little heat. Digest the iodine and the iron in a flask, with the remaining 3 ounces of the water, heating slightly, and occasionally shaking until the froth becomes white; add now 2 fluid ounces of the syrup, and boil gently for ten minutes; then filter the liquid while still hot into the remainder of the warm syrup, and mix. The product should weigh about 2 pounds 11 ounces, and its specific gravity should be about 1·385.

It contains 4·3 grains of iodide of iron in 1 fluid drachm.

This syrup is very liable to change, forming oxyiodide of iron, and free iodine. The change can be prevented by immersing in the syrup a coil of iron wire, or by adding a small quantity of hypophosphorous acid.

Dr. Redwood states that by boiling the solution of iodide of iron with a portion of the syrup, a little glucose is formed, through the presence of hydriodic acid, and its action on the cane sugar; the glucose acting as a preservative.

SYRUPUS FERRI PHOSPHATIS.

Syrup of Phosphate of Iron.

Take of

Granulated Sulphate of Iron	224 grains.
Phosphate of Sodium	200 grains.
Bicarbonate of Sodium	56 grains.
Concentrated Phosphoric Acid	1¼ fluid ounces.
Refined Sugar	8 ounces.
Distilled Water	8 fluid ounces.

Dissolve the sulphate of iron in about 4 ounces of boiling water, and the phosphate of sodium in a similar quantity of cold water; mix the solutions, then add the bicarbonate of sodium dissolved in a little water, and, after careful stirring, transfer the precipitate to a calico filter, and wash it with distilled water, till the filtrate ceases to be affected by chloride of barium. Mix the residue on the filter in a mortar with the phosphoric acid. As soon as the precipitate is dissolved filter the solution, add water and the sugar, and dissolve without heat. The product should measure exactly 12 fluid ounces; any water which may be necessary, beyond that introduced with the precipitate or with the sugar, being added to form the stated bulk. Its specific gravity is about 1·305.

It contains the equivalent of about 1 grain of anhydrous phosphate of iron, $Fe_3(PO_4)_2$, in 1 fluid drachm.

A much simpler method of making this syrup was suggested by H. W. Jones, *Pharmaceutical Journal*, p. 541, 1874. It consists of dissolving iron in phosphoric acid. The author has followed the process for some years with the highest satisfaction.

SYRUPUS HEMIDESMI.

Syrup of Hemidesmus.

Take of

Hemidesmus Root, bruised	4 ounces.
Refined Sugar	28 ounces.
Boiling Distilled Water	1 pint.

Infuse the hemidesmus in the water in a covered vessel for four hours, and strain. Set it by till the sediment subsides; then decant the clear liquor, add the sugar, and dissolve by help of a little heat. The product should weigh 2 pounds 10 ounces, and its specific gravity be about 1·335.

SYRUPUS LIMONIS.

Syrup of Lemons.

Take of

Fresh Lemon Peel	2 ounces.
Lemon Juice, strained	1 pint.
Refined Sugar	2¼ pounds.

Heat the lemon juice to the boiling-point, and, having put it into a covered vessel with the lemon peel, let them stand until they are cold; then filter, and dissolve the sugar in the filtered liquid with the aid of heat. The product should weigh 3½ pounds, and its specific gravity be about 1·340.

SYRUPUS MORI.

Syrup of Mulberries.

Take of

Mulberry Juice	1 pint.
Refined Sugar	2¼ pounds.
Rectified Spirit	2½ fluid ounces.

Heat the mulberry juice to the boiling-point, and when it has cooled filter it. Dissolve the sugar in the filtered liquid with the aid of heat, and add the spirit. The product should weigh 3 pounds 6 ounces, and its specific gravity be about 1·330.

SYRUPUS PAPAVERIS.

Syrup of Poppies.

Take of

Poppy Capsules, freed from the seeds, and reduced to No. 20 powder	36 ounces.
Rectified Spirit	16 fl. ounces.
Refined Sugar	4 pounds.
Boiling Distilled Water	a sufficiency.

Mix the poppy capsules with 4 pints of the water, and infuse for twenty-four hours, stirring frequently; then pack in a percolator, and adding more of the water allow the liquor slowly to pass until about 2 gallons have been collected, or the mass is exhausted. Evaporate the liquor by a water-bath until it is reduced to 3 pints. When quite cold add the spirit, let the mixture stand for twelve hours, and filter. Distil off the spirit, the remaining liquor being evaporated to 2 pints, and then add the sugar. The product should weigh 6½ pounds, and its specific gravity be about 1·330.

The use of the spirit in this process is to coagulate and remove the albumen and gummy matters of the extract.

SYRUPUS RHEI.

Syrup of Rhubarb.

Take of

Rhubarb Root, in No. 20 powder Coriander Fruit, in No. 20 powder	of each 2 ounces.
Refined Sugar	24 ounces.
Rectified Spirit	8 fluid ounces.
Distilled Water	24 fluid ounces.

Mix the rhubarb and coriander; pack them in a percolator; pass the spirit and water, previously mixed, slowly through them; evaporate the liquid that has thus passed until it is reduced to 14 fluid ounces, and in this, after it has been filtered, dissolve the sugar with the aid of heat. The product should weigh nearly 2½ pounds.

SYRUPUS RHŒADOS

Syrup of Red Poppy.

Take of

Fresh Red Poppy Petals .	13 ounces.
Refined Sugar . . .	2¼ pounds.
Distilled Water . . .	1 pint or a sufficiency.
Rectified Spirit . . .	2½ fluid ounces.

Add the petals gradually to the water heated in a water-bath, frequently stirring, and afterwards, the vessel being removed, infuse for twelve hours. Then press out the liquor, strain, add the sugar, and dissolve by means of heat. When nearly cold, add the spirit and as much distilled water as may be necessary to make up for loss in the process, so that the product shall weigh 3 pounds 10 ounces. Its specific gravity should be about 1·330.

SYRUPUS ROSÆ GALLICÆ.

Syrup of Red Roses.

Take of

Dried Red Rose Petals	2 ounces.
Refined Sugar	30 ounces.
Boiling Distilled Water	1 pint.

Infuse the petals in the water for two hours, squeeze through calico, heat the liquor to the boiling-point, and filter. Dissolve the sugar in the liquor by means of heat. The product should weigh 2 pounds 14 ounces, and its specific gravity be about 1·335.

SYRUPUS SCILLÆ.

Syrup of Squill.

Take of

Vinegar of Squill	1 pint.
Refined Sugar	2½ pounds.

Dissolve with the aid of a little heat. Specific gravity about 1·345.

SYRUPUS SENNÆ.

Syrup of Senna.

Take of

Senna, broken small .	16 ounces.
Oil of Coriander . .	3 minims.
Refined Sugar . . .	24 ounces.
Distilled Water . .	5 pints or a sufficiency.
Rectified Spirit . .	3 fluid ounces.

Digest the senna in 70 ounces of the water for twenty-four hours at a temperature of 120° F.; press out the liquor and strain it. Digest the marc in 30 ounces of the water for six hours at the same temperature; again press out the liquor and strain it. Evaporate the mixed liquors in a water-bath to 10 fluid ounces, and, when cold, add the rectified spirit, previously mixed with the oil of coriander. Clarify by filtration, and wash what remains on the filter with distilled water, until the washings make up the filtrate to 16 fluid ounces. Then add the sugar, and dissolve by aid of heat. The product should weigh 2 pounds 10 ounces, and its specific gravity be about 1·310.

SYRUPUS TOLUTANUS.

Syrup of Tolu.

Take of

Balsam of Tolu . . .	$1\frac{1}{4}$ ounce.
Refined Sugar . . .	2 pounds.
Distilled Water . . .	1 pint or a sufficiency.

Boil the balsam in the water for half an hour in a lightly-covered vessel, stirring occasionally. Then remove from the fire, and add distilled water, if necessary, so that the liquid shall measure 16 ounces. Filter the solution when cold, add the sugar, and dissolve with the aid of a steam or water bath. The product should weigh 3 pounds, and its specific gravity be about 1·330.

SYRUPUS ZINGIBERIS.

Syrup of Ginger.

Take of

Strong Tincture of Ginger . .	6 fluid drachms.
Syrup	19 fluid ounces.

Mix, with agitation.

TABELLÆ.

Tablets.

Small oval or circular tablets, having a basis of chocolate.

TABELLÆ NITROGLYCERINI.

Tablets of Nitroglycerine.

Tablets of chocolate, each weighing 2½ grains, and containing $\frac{1}{100}$ grain of pure nitroglycerine.

TINCTURÆ.

Tinctures (74).

The above number includes two tinctures in the appendix to the Pharmacopœia.

A tincture is an alcoholic solution of one or more drugs, or the soluble parts of such drugs. The solutions, being spirituous, are very permanent.

Three processes are followed for making tinctures: 1. percolation; 2. maceration; 3. a combination process of maceration and percolation.

The process of percolation is only used in the B. P. for the strong tincture of ginger.

Solution, or maceration, is employed in the following tinctures: Aloes, Asafœtida, Orange, Fresh Orange, Compound Benzoin, Compound Camphor, Indian Hemp, Cantharides, Catechu, Compound Chloroform, Chloroform and Morphine, Cochineal, Acetate of Iron, Perchloride of Iron, Ammoniated Guaiacum, Ammoniated Valerian, Iodine, Kino, Compound Lavender, Lemon, Ethereal Lobelia, Nux Vomica, Opium, Ammoniated Opium, Podophyllin, Quassia, Quinine, Ammoniated Quinine, Tolu. The student will particularly notice that many of the drugs entering into the above tinctures are of a resinous, gum-resinous, or extractive nature, and, therefore, not suited for percolation.

The remaining tinctures are made by the combination process of percolation and maceration.

For the thorough exhaustion of drugs in tincture-making, it is highly important to have the drugs well divided. For this purpose and that of uniformity, the British Pharmacopœia directs that "the degrees of disintegration be represented by numbers ranging from No. 20 to No. 60, these numbers indicating the numbers of parallel wires within a linear inch, forming the meshes of the sieves used." Where tinctures are made from leaves, No. 20 powder is used, except in the case of tincture of jaborandi. No. 40 powder is used in most cases where tinctures are made from roots barks, and rhizomes, but for tincture of rhubarb No. 20 powder is employed.

Tinctures made with Rectified Spirit.

Tinctura Aconiti.
„ Arnicæ.
„ Asafœtidæ.
„ Aurantii Recentis.
„ Benzoini Composita.
„ Cannabis Indicæ.
„ Capsici.
„ Cinnamomi.
„ Curcumæ.
„ Cubebæ.
„ Iodi.

Tinctura Laricis.
„ Lavandulæ Composita.
„ Myrrhæ.
„ Opii Ammoniata.
„ Podophylli.
„ Pyrethri.
„ Sumbul.
„ Tolutana.
„ Veratri Viridis.
„ Zingiberis.

Tinctura Zingiberis Fortior.

Tinctures made with Proof Spirit.

Tinctura Aloes.
„ Aurantii.
„ Belladonnæ.
„ Buchu.
„ Calumbæ.
„ Camphoræ Composita.
„ Cantharidis.
„ Cardamomi Composita.
„ Cascarillæ.
„ Catechu.
„ Chiratæ.
„ Cimicifugæ.
„ Cinchonæ.
„ „ Composita.
„ Cocci.
„ Colchici Seminum.
„ Conii.
„ Croci.
„ Digitalis.
„ Ergotæ.
Tinctura Gallæ.
„ Gelsemii.
„ Gentianæ Composita.
„ Hyoscyami.
„ Jaborandi.
„ Jalapæ.
„ Krameriæ.
„ Limonis.
„ Lobeliæ.
„ Lupuli.
„ Opii.
„ Phenol-Phthalein.
„ Quassiæ.
„ Quininæ.
„ „ Ammoniata.
„ Rhei.
„ Sabinæ.
„ Scillæ.
„ Senegæ.
„ Sennæ.
„ Serpentariæ.
„ Stramonii.
Tinctura Valerianæ.

TINCTURA ACONITI.

Tincture of Aconite.

Take of

Aconite Root from plants cultivated in Britain, in No. 40 powder . . .	2½ ounces.
Rectified Spirit	1 pint.

Macerate the aconite root for forty-eight hours in 15 fluid ounces of the spirit in a closed vessel, agitating occasionally;

then transfer to a percolator, and when the fluid ceases to pass, continue the percolation with the remaining 5 ounces of spirit. Afterwards subject the contents of the percolator to pressure, filter the product, mix the liquids, and add sufficient rectified spirit to make 1 pint.

TINCTURA ALOES.

Tincture of Aloes.

Take of

Socotrine Aloes, in coarse powder .	½ ounce.
Extract of Liquorice . . .	1½ ounce.
Proof Spirit	a sufficiency.

Macerate the aloes and extract of liquorice in 15 fluid ounces of the spirit for seven days, in a closed vessel, with occasional agitation, then filter, and add sufficient proof spirit to make 1 pint.

TINCTURA ARNICÆ.

Tincture of Arnica.

Take of

Arnica Rhizome, in No. 40 powder . .	1 ounce.
Rectified Spirit	1 pint.

Process.—Same as for tincture of aconite.

TINCTURA ASAFŒTIDÆ.

Tincture of Asafœtida.

Take of

Asafœtida, in small fragments . .	2½ ounces.
Rectified Spirit	a sufficiency.

Macerate the asafœtida in 15 fluid ounces of the spirit for seven days in a closed vessel, with occasional agitation, then filter, and add sufficient rectified spirit to make 1 pint.

TINCTURA AURANTII.

Tincture of Orange Peel.

Take of

Bitter Orange Peel, cut small and bruised	2 ounces.
Proof Spirit	1 pint.

Macerate for seven days in a closed vessel, with occasional agitation, then strain, press, and filter, and add sufficient proof spirit to make 1 pint.

TINCTURA AURANTII RECENTIS.

Tincture of Fresh Orange Peel.

Take of

Bitter Orange	of each a sufficiency.
Rectified Spirit	

Carefully cut from the orange the coloured part of the rind in thin slices, and macerate 6 ounces of this in 18 fluid ounces of the spirit for a week, with frequent agitation. Then pour off the liquid, press the dregs, mix the liquid products, and filter. Finally, if necessary, add spirit to make 1 pint.

TINCTURA BELLADONNÆ.

Tincture of Belladonna.

Take of

Belladonna Leaves, in No. 20 powder	1 ounce.
Proof Spirit	1 pint.

Process.—Same as for tincture of aconite.

TINCTURA BENZOINI COMPOSITA.

Compound Tincture of Benzoin.

Take of

Benzoin, in coarse powder	2 ounces.
Prepared Storax	1½ ounce.
Balsam of Tolu	½ ounce.
Socotrine Aloes	160 grains.
Rectified Spirit	1 pint.

Macerate for seven days in a closed vessel, with occasional agitation; then filter, and add sufficient rectified spirit, if required, to make 1 pint.

TINCTURA BUCHU.

Tincture of Buchu.

Take of

Buchu Leaves, in No. 20 powder	2½ ounces.
Proof Spirit	1 pint.

Process.—Same as for tincture of aconite.

TINCTURA CALUMBÆ.

Tincture of Calumba.

Take of

Calumba Root, cut small	2½ ounces.
Proof Spirit	1 pint.

Process.—Same as for tincture of aconite.

TINCTURA CAMPHORÆ COMPOSITA.

Compound Tincture of Camphor.

Take of

Opium, in powder	40 grains.
Benzoic Acid	40 grains.
Camphor	30 grains.
Oil of Anise	½ fluid drachm.
Proof Spirit	1 pint.

Macerate for seven days in a closed vessel, with occasional agitation; then filter, and add sufficient proof spirit to make 1 pint.

It is commonly known as "Paregoric Elixir," and contains the soluble matter of 2 grains of opium in the fluid ounce.

TINCTURA CANNABIS INDICÆ.

Tincture of Indian Hemp.

Take of

Extract of Indian Hemp	1 ounce.
Rectified Spirit	1 pint.

Dissolve the extract of hemp in the spirit.

TINCTURA CANTHARIDIS.

Tincture of Cantharides.

Take of

Cantharides, in coarse powder	¼ ounce.
Proof Spirit	1 pint.

Macerate for seven days in a closed vessel, with occasional agitation, strain, press, filter, and add sufficient proof spirit to make 1 pint.

TINCTURA CAPSICI.

Tincture of Capsicum.

Take of

Capsicum Fruit, bruised	¾ ounce.
Rectified Spirit	1 pint.

Process.—Same as for tincture of aconite.

TINCTURA CARDAMOMI COMPOSITA.

Compound Tincture of Cardamoms.

Take of

Cardamom Seeds, bruised	¼ ounce.
Caraway Fruit, bruised	¼ ounce.
Raisins, freed from seeds	2 ounces.
Cinnamon Bark, bruised	½ ounce.
Cochineal, in powder	55 grains.
Proof Spirit	1 pint.

Process.—Same as for tincture of aconite.

TINCTURA CASCARILLÆ.

Tincture of Cascarilla.

Take of

Cascarilla Bark, in No. 40 powder	2½ ounces.
Proof Spirit	1 pint.

Process.—Same as for tincture of aconite.

TINCTURA CATECHU.

Tincture of Catechu.

Take of

Catechu, in coarse powder	2½ ounces.
Cinnamon Bark, bruised	1 ounce.
Proof Spirit	1 pint.

Macerate for seven days in a closed vessel, with occasional agitation; strain, press, filter, and add sufficient proof spirit to make 1 pint.

TINCTURA CHIRATÆ.

Tincture of Chiretta.

Take of

Chiretta, cut small and bruised	2½ ounces.
Proof Spirit	1 pint.

Process.—Same as for tincture of aconite.

TINCTURA CHLOROFORMI COMPOSITA.

Compound Tincture of Chloroform.

Take of

Chloroform	2 fluid ounces.
Rectified Spirit	8 fluid ounces.
Compound Tincture of Cardamoms	10 fluid ounces.

Mix.

TINCTURA CHLOROFORMI ET MORPHINÆ.

Tincture of Chloroform and Morphine.

Take of

		Contains in a 10-minim dose.
Chloroform . . .	1 fl. ounce	$1\frac{1}{4}$ minim.
Ether	2 fl. drachms	$\frac{1}{3}$ minim.
Rectified Spirit . .	1 fl. ounce	$1\frac{1}{4}$ minim.
Hydrochlorate of Morphine	8 grains	$\frac{1}{48}$ grain.
Diluted Hydrocyanic Acid	$\frac{1}{2}$ fl. ounce	$\frac{5}{8}$ minim.
Oil of Peppermint . .	4 minims	$\frac{1}{80}$ minim.
Liquid Extract of Liquorice	1 fl. ounce	$1\frac{1}{4}$ minim.
Treacle	1 fl. ounce	
Syrup	a sufficiency	

Dissolve the hydrochlorate of morphine and oil of peppermint in the spirit, and add the chloroform and ether. Mix the liquid extract of liquorice and treacle with 3 fluid ounces of syrup, add this to the previously-formed solution, mix them thoroughly, add the hydrocyanic acid, and increase the volume to 8 fluid ounces by further addition of syrup.

This preparation is an imitation of the popular proprietary medicine called Chlorodyne.

TINCTURA CIMICIFUGÆ.

Tincture of Cimicifuga.

Synonyms.—TINCTURA ACTÆÆ : TINCTURE OF ACTÆA.

Take of

Cimicifuga, in No. 40 powder . .	$2\frac{1}{2}$ ounces.
Proof Spirit	1 pint.

Process.—Same as for tincture of aconite.

TINCTURA CINCHONÆ.

Tincture of Cinchona.

Take of

Red Cinchona Bark, in No. 40 powder	4 ounces.
Proof Spirit	1 pint.

Process.—Same as for tincture of aconite.

TINCTURA CINCHONÆ COMPOSITA.

Compound Tincture of Cinchona.

Take of

Red Cinchona Bark, in No. 40 powder	2 ounces.
Bitter-Orange Peel, cut small and bruised	1 ounce.
Serpentary Rhizome, bruised	½ ounce.
Saffron	55 grains.
Cochineal, in powder	28 grains.
Proof Spirit	1 pint.

Process.—Same as for tincture of aconite.

TINCTURA CINNAMOMI.

Tincture of Cinnamon.

Take of

Cinnamon Bark, in coarse powder	2½ ounces.
Rectified Spirit	1 pint.

Process.—Same as for tincture of aconite.

TINCTURA COCCI.

Tincture of Cochineal.

Take of

Cochineal, in powder	2½ ounces.
Proof Spirit	1 pint.

Macerate for seven days in a closed vessel, with occasional agitation; strain, press, filter, and add sufficient proof spirit to make 1 pint.

TINCTURA COLCHICI SEMINUM.

Tincture of Colchicum Seeds.

Take of

Colchicum Seeds, finely comminuted	2½ ounces.
Proof Spirit	1 pint.

Process.—Same as for tincture of aconite.

TINCTURA CONII.

Tincture of Hemlock.

Take of

Hemlock Fruit, finely comminuted	2½ ounces.
Proof Spirit	1 pint.

Process.—Same as for tincture of aconite.

TINCTURA CROCI.

Tincture of Saffron.

Take of

Saffron	1 ounce.
Proof Spirit	1 pint.

Process.—Same as for tincture of aconite.

TINCTURA CUBEBÆ.

Tincture of Cubebs.

Take of

Cubebs, in powder	2½ ounces.
Rectified Spirit	1 pint.

Process.—Same as for tincture of aconite.

TINCTURA DIGITALIS.

Tincture of Foxglove.

Take of

Foxglove Leaves, in No. 20 powder	2½ ounces.
Proof Spirit	1 pint.

Process.—Same as for tincture of aconite.

TINCTURA ERGOTÆ.

Tincture of Ergot.

Take of

Ergot, finely comminuted	5 ounces.
Proof Spirit	1 pint.

Process.—Same as for tincture of aconite.

TINCTURA FERRI ACETATIS.

Tincture of Acetate of Iron.

Take of

Strong Solution of Acetate of Iron	5 fluid ounces.
Acetic Acid	1 fluid ounce.
Rectified Spirit	5 fluid ounces.
Distilled Water	9 fluid ounces.

Mix, and then add sufficient distilled water to make 1 pint. Preserve in a stoppered bottle.

TINCTURA FERRI PERCHLORIDI.

Tincture of Perchloride of Iron.

Synonym.—TINCTURA FERRI SESQUICHLORIDI.

Take of

Strong Solution of Perchloride of Iron	5 fluid ounces.
Rectified Spirit	5 fluid ounces.
Distilled Water	10 fluid ounces.

Mix, and then add sufficient distilled water to make 1 pint. Preserve in a stoppered bottle.

TINCTURA GALLÆ.

Tincture of Galls.

Take of

Galls, in No. 40 powder	2½ ounces.
Proof Spirit	1 pint.

Process.—Same as for tincture of aconite.

TINCTURA GELSEMII.

Tincture of Gelsemium.

Take of

Gelsemium, in No. 40 powder . .	2½ ounces.
Proof Spirit	1 pint.

Process.—Same as for tincture of aconite.

TINCTURA GENTIANÆ COMPOSITA.

Compound Tincture of Gentian.

Take of

Gentian Root, cut small and bruised .	1½ ounce.
Bitter-Orange Peel, cut small and bruised	¾ ounce.
Cardamom Seeds, bruised . . .	¼ ounce.
Proof Spirit	1 pint.

Process.—Same as for tincture of aconite.

TINCTURA GUAIACI AMMONIATA.

Ammoniated Tincture of Guaiacum.

Take of

Guaiacum Resin, in powder . .	4 ounces.
Aromatic Spirit of Ammonia . .	a sufficiency.

Macerate the guaiacum in 15 fluid ounces of the aromatic spirit of ammonia for seven days in a well-closed vessel, with occasional agitation, and filter; then add sufficient aromatic spirit of ammonia to make 1 pint.

TINCTURA HYOSCYAMI.

Tincture of Henbane.

Take of

Henbane Leaves or Flowering Tops, in No. 20 powder , . . .	2½ ounces.
Proof Spirit	1 pint.

Process.—Same as for tincture of aconite.

TINCTURA IODI.

Tincture of Iodine.

Take of

Iodine	½ ounce.
Iodide of Potassium	½ ounce.
Rectified Spirit	1 pint.

Dissolve the iodine and the iodide of potassium in the spirit.

TINCTURA JABORANDI.

Tincture of Jaborandi.

Take of

Jaborandi, in No. 40 powder	5 ounces.
Proof Spirit	1 pint.

Process.—Same as for tincture of aconite.

TINCTURA JALAPÆ.

Tincture of Jalap.

Take of

Jalap, in No. 40 powder	2½ ounces.
Proof Spirit	1 pint.

Process.—Same as for tincture of aconite.

TINCTURA KINO.

Tincture of Kino.

Take of

Kino, in coarse powder	2 ounces.
Glycerine	3 fluid ounces.
Distilled Water	5 fluid ounces.
Rectified Spirit	12 fluid ounces.

Macerate for seven days in a closed vessel, with occasional agitation, filter, and add sufficient rectified spirit to make 1 pint.

TINCTURA KRAMERIÆ.

Tincture of Rhatany.

Take of

Rhatany Root, in No. 40 powder	2½ ounces.
Proof Spirit	1 pint.

Process.—Same as for tincture of aconite.

TINCTURA LARICIS.

Tincture of Larch.

Take of

Larch Bark, in No. 40 powder	2½ ounces.
Rectified Spirit	1 pint.

Process.—Same as for tincture of aconite.

TINCTURA LAVANDULÆ COMPOSITA.

Compound Tincture of Lavender.

Synonym.—SPIRITUS LAVANDULÆ COMPOSITUS.

Take of

Oil of Lavender	1½ fluid drachm.
Oil of Rosemary	10 minims.
Cinnamon Bark, bruised	150 grains.
Nutmeg, bruised	150 grains.
Red Sandal-wood	300 grains.
Rectified Spirit	2 pints.

Macerate the cinnamon, nutmeg, and red sandal-wood in the spirit for seven days in a closed vessel, with occasional agitation; then strain and press, dissolve the oils in the strained tincture, filter, and add sufficient rectified spirit to make 2 pints.

TINCTURA LIMONIS.

Tincture of Lemon Peel.

Take of

Fresh Lemon Peel, cut small	2½ ounces.
Proof Spirit	1 pint.

Macerate for seven days in a closed vessel, with occasional agitation ; strain, press, and filter ; then add sufficient proof spirit to make 1 pint.

TINCTURA LOBELIÆ.

Tincture of Lobelia.

Take of

Lobelia, in No. 40 powder . . .	2½ ounces.
Proof Spirit	1 pint.

Process.—Same as for tincture of aconite.

TINCTURA LOBELIÆ ÆTHEREA.

Ethereal Tincture of Lobelia.

Take of

Lobelia, in coarse powder . . .	2½ ounces.
Spirit of Ether	1 pint.

Macerate for seven days in a closed vessel, with occasional agitation ; then strain, press, filter, and add sufficient spirit of ether to make 1 pint.

TINCTURA LUPULI.

Tincture of Hop.

Take of

Hop	2½ ounces.
Proof Spirit	1 pint.

Process.—Same as for tincture of aconite.

TINCTURA MYRRHÆ.

Tincture of Myrrh.

Take of

Myrrh, in coarse powder . .	2½ ounces.
Rectified Spirit	1 pint.

Process.—Same as for tincture of aconite.

TINCTURA NUCIS VOMICÆ.

Tincture of Nux Vomica.

Take of

Extract of Nux Vomica . .	133 grains.
Distilled Water	4 fluid ounces.
Rectified Spirit	a sufficiency.

Mix sufficient of the spirit with the water to produce 20 fluid ounces, and dissolve the extract in the mixture.

One fluid ounce of this tincture will contain 1 grain of the alkaloids of nux vomica.

TINCTURA OPII.

Tincture of Opium.

Take of

Opium, in powder	$1\frac{1}{2}$ ounce.
Proof Spirit	1 pint.

Macerate for seven days in a closed vessel, with occasional agitation; then strain, press, filter, and add sufficient proof spirit to make 1 pint.

It contains the soluble matter of 33 grains of the opium, nearly, in 1 fluid ounce; or about 3·3 grains of morphine in 1 fluid ounce; or about 0·75 per cent. of morphine; or about $1\frac{1}{4}$ per cent. of bimeconate of morphine, besides the other alkaloidal salts of opium.

TINCTURA OPII AMMONIATA.

Ammoniated Tincture of Opium.

Take of

Opium, in powder . . .	100 grains.
Saffron, cut small . . .	180 grains.
Benzoic Acid	180 grains.
Oil of Anise	1 fluid drachm.
Strong Solution of Ammonia .	4 fluid ounces.
Rectified Spirit	16 fluid ounces.

Macerate for seven days in a well-closed vessel, with occasional agitation; then strain, press, filter, and add sufficient rectified spirit to make 1 pint.

It contains the soluble matter of 5 grains of opium in 1 fluid ounce.

TINCTURA PODOPHYLLI.

Tincture of Podophyllum.

Take of

Resin of Podophyllum	160 grains or 1 part.
Rectified Spirit	1 pint or 54·68 fluid parts.

Dissolve and filter.

It contains 1 grain of the resin in 1 fluid drachm.

TINCTURA PYRETHRI.

Tincture of Pellitory.

Take of

Pellitory Root, in No. 40 powder	4 ounces.
Rectified Spirit	1 pint.

Process.—Same as for tincture of aconite.

TINCTURA QUASSIÆ.

Tincture of Quassia.

Take of

Quassia Wood, in chips	¾ ounce.
Proof Spirit	1 pint.

Macerate for seven days in a closed vessel, with occasional agitation; then strain, press, filter, and add sufficient proof spirit to make 1 pint.

TINCTURA QUININÆ.

Tincture of Quinine.

Take of

Hydrochlorate of Quinine	160 grains.
Tincture of Orange Peel	1 pint.

Dissolve the hydrochlorate of quinine in the tincture with the aid of a little heat; then allow the solution to remain for three days in a closed vessel, shaking it occasionally; and afterwards filter.

TINCTURA QUININÆ AMMONIATA.

Ammoniated Tincture of Quinine.

Take of

Sulphate of Quinine . . .	160 grains.
Solution of Ammonia . .	2½ fluid ounces.
Proof Spirit	17½ fluid ounces.

Dissolve the sulphate of quinine in the spirit with the aid of a little heat, and add the solution of ammonia.

This tincture contains the quinine in the condition of pure alkaloid, the ammonia separating it as such with formation of sulphate of ammonia. The proof spirit holds the quinine in solution, but on dilution with water part of the quinine is precipitated.

TINCTURA RHEI.

Tincture of Rhubarb.

Take of

Rhubarb Root, in No. 20 powder . .	2 ounces.
Cardamom Seeds, bruised . . .	¼ ounce.
Coriander Fruit, bruised	¼ ounce.
Saffron	¼ ounce.
Proof Spirit	1 pint.

Process.—Same as for tincture of aconite.

TINCTURA SABINÆ.

Tincture of Savin.

Take of

Savin Tops, dried and coarsely powdered	2½ ounces.
Proof Spirit	1 pint.

Process.—Same as for tincture of aconite.

TINCTURA SENNÆ.

Tincture of Senna.

Take of

Senna, broken small	2½ ounces.
Raisins, freed from seeds	2 ounces.
Caraway Fruit, bruised	½ ounce.
Coriander Fruit, bruised	½ ounce.
Proof Spirit	1 pint.

Process.—Same as for tincture of aconite.

TINCTURA SERPENTARIÆ.

Tincture of Serpentary.

Take of

Serpentary Rhizome, in No. 40 powder	2½ ounces.
Proof Spirit	1 pint.

Process.—Same as for tincture of aconite.

TINCTURA SENEGÆ.

Tincture of Senega.

Take of

Senega Root, in No. 40 powder	2½ ounces.
Proof Spirit	1 pint.

Process.—Same as for tincture of aconite.

TINCTURA SCILLÆ.

Tincture of Squill.

Take of

Squill, bruised	2½ ounces.
Proof Spirit	1 pint.

Process.—Same as for tincture of aconite.

TINCTURA STRAMONII.

Tincture of Stramonium.

Take of

Stramonium Seeds, bruised	2½ ounces.
Proof Spirit	1 pint.

Process.—Same as for tincture of aconite.

TINCTURA SUMBUL.

Tincture of Sumbul.

Take of

Sumbul Root, in No. 40 powder	2½ ounces.
Rectified Spirit	1 pint.

Process.—Same as for tincture of aconite.

TINCTURA TOLUTANA.

Tincture of Tolu.

Take of

Balsam of Tolu	2½ ounces.
Rectified Spirit	a sufficiency.

Macerate the balsam of Tolu in 15 fluid ounces of the spirit in a closed vessel, with occasional agitation for six hours, or until the balsam is dissolved; then filter, and add sufficient rectified spirit to make 1 pint.

TINCTURA VALERIANÆ.

Tincture of Valerian.

Take of

Valerian Rhizome, in No. 40 powder	2½ ounces.
Proof Spirit	1 pint.

Process.—Same as for tincture of aconite.

TINCTURA VALERIANÆ AMMONIATA.

Ammoniated Tincture of Valerian.

Take of

Valerian Rhizome, in No. 40 powder	2½ ounces.
Aromatic Spirit of Ammonia	1 pint.

Macerate for seven days in a well-closed vessel, with occasional agitation; then strain, press, filter, and add sufficient aromatic spirit of ammonia to make 1 pint.

TINCTURA VERATRI VIRIDIS.

Tincture of Green Hellebore.

Take of

Green Hellebore Rhizome, in No. 40 powder	4 ounces.
Rectified Spirit	1 pint.

Process.—Same as for tincture of aconite.

TINCTURA ZINGIBERIS.

Tincture of Ginger.

Take of

Ginger, in powder	2½ ounces.
Rectified Spirit	1 pint.

Process.—Same as for tincture of aconite.

TINCTURA ZINGIBERIS FORTIOR.

Strong Tincture of Ginger.

Synonym.—ESSENCE OF GINGER.

Take of

Ginger, in fine powder	10 ounces.
Rectified Spirit	a sufficiency.

Percolate slowly until one pint is collected.

Tinctures of the Appendix.

TINCTURE OF PHENOL-PHTHALEIN.

Take of

Phenol-phthalein	1 grain.
Proof Spirit	500 grains.

Dissolve. The solution should be colourless.

It is used as an indicator of the termination of reactions in volumetric testing.

TINCTURE OF TURMERIC.

Take of

Turmeric, bruised	1 ounce.
Rectified Spirit	6 fluid ounces.

Macerate for seven days in a closed vessel, and filter.

Strength of Tinctures.

1 in 2.

Tincture of Ginger (Strong).

1 in $3\frac{1}{2}$.

Tincture of Fresh Orange Peel.

1 in 4.

Tincture of Ergot.
„ „ Acetate of Iron.
„ „ Perchloride of Iron.
„ „ Jaborandi.

1 in 5.

Tincture of Guaiacum (Ammoniated).
„ „ Cinchona.
„ „ Pellitory.
„ „ Green Hellebore.

1 in 8.

Tincture of Aconite.
,, Asafœtida.
,, Calumba.
,, Catechu.
,, Cimicifuga.
,, Cochineal.
,, Colchicum Seed.
,, Conium.
,, Cubebs.
,, Digitalis.
,, Galls.
,, Gelsemium.
,, Henbane.
,, Hops.
,, Jalap.
,, Rhatany.

Tincture of Larch.
,, Lemon.
,, Lobelia.
,, ,, Ethereal.
,, Myrrh.
,, Savin.
,, Squill.
,, Senega.
,, Serpentary.
,, Stramonium.
,, Sumbul.
,, Tolu.
,, Valerian.
,, ,, Ammoniated.
,, Ginger.

1 in 10.

Tincture of Orange Peel.
,, Benzoin (Compound).
,, Chloroform (Compound).
,, Cinchona (Compound).
,, Kino.
,, Rhubarb.

1 in 20.

Tincture of Arnica.
,, ,, Belladonna.
,, ,, Indian Hemp.
,, ,, Saffron.

1 in 27.

Tincture of Capsicum.
„ „ Quassia.

1 in 40.

Tincture of Aloes.
„ „ Iodine.

1 in 60.

Tincture of Quinine.
„ „ Quinine (Ammoniated).
„ „ Podophyllum.

1 in 80.

Tincture of Cantharides.
„ „ Cardamoms (Compound).

TROCHISCI.

Lozenges (12).

These are preparations usually of a tabular form, designed in some cases for the elegant exhibition of remedies; in others for the purpose of maintaining a gentle and continuous local action of some drug. All the lozenges contain sugar and gum acacia as a base; as flavouring agents, tincture of tolu is employed in some, rose water in others.

The general instructions for manipulating the ingredients are, to mix the dry materials well together, adding the fluid ingredients so as to form a proper mass, then divide the mass into the specified number of lozenges, and dry them in a hot-air chamber at a moderate temperature.

TROCHISCI ACIDI BENZOICI.

Benzoic Acid Lozenges.

Take of

Benzoic Acid	360 grains.
Refined Sugar, in powder	25 ounces.
Gum Acacia, in powder	1 ounce.
Mucilage of Gum Acacia	2 fluid ounces.
Distilled Water	a sufficiency.

Mix well. Divide into 720 lozenges, and dry them. Each lozenge contains ½ grain of benzoic acid.

TROCHISCI ACIDI TANNICI.

Tannic Acid Lozenges.

Take of

Tannic Acid	360 grains.
Tincture of Tolu	½ fluid ounce.
Refined Sugar, in powder	25 ounces.
Gum Acacia, in powder	1 ounce.
Mucilage of Gum Acacia	2 fluid ounces.
Distilled Water	1 fluid ounce.

Mix well. Divide into 720 lozenges, and dry them. Each lozenge contains ½ grain of tannic acid.

TROCHISCI BISMUTHI.

Bismuth Lozenges.

Take of

Subnitrate of Bismuth	1440 grains.
Carbonate of Magnesium	4 ounces.
Precipitated Carbonate of Calcium	6 ounces.
Refined Sugar	29 ounces.
Gum Acacia, in powder	1 ounce.
Mucilage of Gum Acacia	2 fluid ounces.
Rose Water	a sufficiency.

Mix well. Divide into 720 lozenges, and dry them. Each lozenge contains 2 grains of subnitrate of bismuth.

TROCHISCI CATECHU.

Catechu Lozenges.

Take of

Catechu, in powder	720 grains.
Refined Sugar, in powder	25 ounces.
Gum Acacia, in powder	1 ounce.
Mucilage of Gum Acacia	2 fluid ounces.
Distilled Water	a sufficiency.

Mix well. Divide into 720 lozenges, and dry them. Each lozenge contains 1 grain of catechu.

TROCHISCI FERRI REDACTI.

Reduced Iron Lozenges.

Take of

Reduced Iron	720 grains.
Refined Sugar, in powder	25 ounces.
Gum Acacia, in powder	1 ounce.
Mucilage of Gum Acacia	2 fluid ounces.
Distilled Water	1 fluid ounce or a sufficiency.

Mix well. Divide into 720 lozenges, and dry them. Each lozenge contains 1 grain of reduced iron.

TROCHISCI IPECACUANHÆ.

Ipecacuanha Lozenges.

Take of

Ipecacuanha, in powder	180 grains.
Refined Sugar, in powder	25 ounces.
Gum Acacia, in powder	1 ounce.
Mucilage of Gum Acacia	2 fluid ounces.
Distilled Water	1 fluid ounce or a sufficiency.

Mix well. Divide into 720 lozenges, and dry them. Each lozenge contains $\frac{1}{4}$ grain of ipecacuanha.

TROCHISCI MORPHINÆ.

Morphine Lozenges.

Take of

Hydrochlorate of Morphine	20 grains.
Tincture of Tolu	$\frac{1}{2}$ fluid ounce.
Refined Sugar, in powder	24 ounces.
Gum Acacia, in powder	1 ounce.
Mucilage of Gum Acacia	a sufficiency.
Distilled Water	$\frac{1}{2}$ fluid ounce.

Mix well. Divide into 720 lozenges, and dry them.

Each lozenge contains $\frac{1}{36}$ grain of hydrochlorate of morphine.

TROCHISCI MORPHINÆ ET IPECACUANHÆ.

Morphine and Ipecacuanha Lozenges.

Take of

Hydrochlorate of Morphine	20 grains.
Ipecacuanha, in fine powder	60 grains.
Tincture of Tolu	$\frac{1}{2}$ fluid ounce.
Refined Sugar, in powder	24 ounces.
Gum Acacia, in powder	1 ounce.
Mucilage of Gum Acacia	a sufficiency.
Distilled Water	$\frac{1}{2}$ fluid ounce.

Mix well. Divide into 720 lozenges, and dry them.

Each lozenge contains $\frac{1}{36}$ grain of hydrochlorate of morphine, and $\frac{1}{12}$ grain of ipecacuanha.

TROCHISCI OPII.

Opium Lozenges.

Take of

Extract of Opium	72 grains.
Tincture of Tolu	$\frac{1}{2}$ fluid ounce.
Refined Sugar, in powder	16 ounces.
Gum Acacia, in powder	2 ounces.
Extract of Liquorice	6 ounces.
Distilled Water	a sufficiency.

Mix well. Divide into 720 lozenges, and dry them.

Each lozenge contains $\frac{1}{10}$ grain of extract of opium, or $\frac{1}{50}$ grain of morphine.

TROCHISCI POTASSII CHLORATIS.

Chlorate of Potassium Lozenges

Take of

Chlorate of Potassium, in powder	3600 grains.
Refined Sugar, in powder	25 grains.
Gum Acacia, in powder	1 ounce.
Mucilage of Gum Acacia	2 fluid ounces.
Distilled Water	1 fluid ounce or a sufficiency.

Mix well. Divide into 720 lozenges, and dry them.

Each lozenge contains 5 grains of chlorate of potassium.

TROCHISCI SANTONINI.

Santonin Lozenges.

Take of

Santonin	720 grains.
Refined Sugar, in powder	25 ounces.
Gum Acacia, in powder	1 ounce.
Mucilage of Gum Acacia	2 fluid ounces.
Distilled Water	a sufficiency.

Mix well. Divide into 720 lozenges, and dry them.

Each lozenge contains 1 grain of santonin.

TROCHISCI SODII BICARBONATIS.

Bicarbonate of Sodium Lozenges.

Take of

Bicarbonate of Sodium, in powder	3600 grains.
Refined Sugar, in powder	25 ounces.
Gum Acacia, in powder	1 ounce.
Mucilage of Gum Acacia	2 fl. ounces.
Distilled Water	1 fl. ounce.

Mix well. Divide into 720 lozenges, and dry them.

Each lozenge contains 5 grains of bicarbonate of sodium.

UNGUENTA.

Ointments (43).

Ointments are local applications, having a fat-like or unctuous base.

There are two leading objects it is desirable to attain in making an ointment. First, that it keep well. Second, that all solids, and other ingredients, are finely divided and intimately mixed.

Benzoated lard is the chief ointment base; it contains the aromatic bodies of resin of benzoin, which retard the oxidation, or rancidity, of the lard.

A mixture of hard and soft paraffins enters into a large number of the ointments; the base it forms is practically unchangeable, as not being a fat it cannot go rancid.

Two of the official mercurial ointments, the red oxide and nitrate, darken by age; this is due to loss of oxygen and separation of mercury. Ointment of iodide of potassium, in spite of the presence of carbonate of potassium, designed to protect it from change, often develops a brown colour from free iodine; the change may be prevented by keeping the ointment under water.

Unguentum Hydrargyri is known as "Blue Ointment."

Unguentum Hydrargyri Ammoniati is known as "White Precipitate Ointment."

Unguentum Hydrargyri Compositum is known as "Scott's Ointment."

Unguentum Hydrargyri Nitratis is known as "Citrine Ointment."

UNGUENTUM ACONITINÆ.

Ointment of Aconitine.

Take of

Aconitine . . .	8 grains or 1 part.
Rectified Spirit . .	½ fl. drachm or 3½ fl. parts.
Benzoated Lard . .	1 ounce or 55 parts.

Dissolve the aconitine in the spirit, add the lard, and mix thoroughly.

UNGUENTUM ANTIMONII TARTARATI.

Ointment of Tartarated Antimony.

Take of

Tartarated Antimony, in fine powder	¼ ounce or 1 part.
Simple Ointment	1 ounce or 4 parts.

Mix thoroughly.

UNGUENTUM ATROPINÆ.

Ointment of Atropine.

Take of

Atropine	8 grains or 1 part.
Rectified Spirit	½ fluid drachm or 3½ fluid parts.
Benzoated Lard	1 ounce or 55 parts.

Dissolve the atropine in the spirit, add the lard, and mix thoroughly.

UNGUENTUM ACIDI CARBOLICI.

Ointment of Carbolic Acid.

Take of

Carbolic Acid	60 grains or 1 part.
Soft Paraffin	720 grains or 12 parts.
Hard Paraffin	360 grains or 6 parts.

Melt, and stir together constantly until cold.

UNGUENTUM ACIDI BORICI.

Ointment of Boric Acid.

Take of

Boric Acid, in fine powder	2½ ounces or 1 part.
Soft Paraffin	10 ounces or 4 parts.
Hard Paraffin	5 ounces or 2 parts.

Melt the hard and soft paraffins together, and add the boric acid distributed over the surface of the liquid by passing it through a sieve, then stir them together constantly until cold.

UNGUENTUM ACIDI SALICYLICI.

Ointment of Salicylic Acid.

Take of

Salicylic Acid . . .	60 grains or 1 part.
Soft Paraffin . . .	1080 grains or 18 parts.
Hard Paraffin . . .	540 grains or 9 parts.

Melt the hard and soft paraffins together, add the salicylic acid, and stir the whole constantly until cold.

UNGUENTUM BELLADONNÆ.

Ointment of Belladonna.

Take of

Alcoholic Extract of Belladonna .	50 grains or 1 part.
Benzoated Lard . . .	1 ounce or 9 parts.

Mix thoroughly.

UNGUENTUM CALAMINÆ.

Ointment of Calamine.

Take of

Prepared Calamine . . .	1 ounce or 1 part.
Benzoated Lard . . .	5 ounces or 5 parts.

Mix thoroughly.

UNGUENTUM CANTHARIDIS.

Ointment of Cantharides.

Take of

Cantharides . . Yellow Wax . .	of each 1 ounce or 1 part.
Olive Oil . .	6 fluid ounces or 6 fluid parts.

Infuse the cantharides in the oil in a covered vessel for twelve hours, then place the vessel in boiling water for fifteen minutes, strain through muslin with strong pressure, add the product to the wax previously melted, and stir constantly while the mixture cools.

UNGUENTUM CETACEI.

Ointment of Spermaceti.

Take of

Spermaceti . . .	5 ounces or 10 parts.
White Wax . . .	2 ounces or 4 parts.
Almond Oil . . .	1 pint or 40 fluid parts.
Benzoin, in coarse powder	½ ounce or 1 part.

Melt together the spermaceti, wax, and almond oil; add the benzoin, and, frequently stirring the mixture, continue the application of heat for two hours; remove from the source of heat, take out the residual benzoïn by straining, and stir constantly until quite cold.

UNGUENTUM CHRYSAROBINI.

Ointment of Chrysarobin.

Take of

Chrysarobin . . .	20 grains or 1 part.
Benzoated Lard . . .	480 grains or 24 parts.

Melt the lard, add the chrysarobin, and stir them together, maintaining a moderate temperature, so as to promote solution; then remove the heat, and stir until cold.

UNGUENTUM CREASOTI.

Ointment of Creasote.

Take of

Creasote . . .	1 fluid drachm or 1 fluid part.
Simple Ointment .	1 ounce or 8 parts.

Mix thoroughly.

UNGUENTUM ELEMI.

Ointment of Elemi.

Take of

Elemi	$\frac{1}{4}$ ounce or 1 part.
Simple Ointment	1 ounce or 8 parts.

Melt, strain through flannel, and stir constantly until the ointment solidifies.

UNGUENTUM EUCALYPTI.

Ointment of Eucalyptus.

Take of

Oil of Eucalyptus, by weight	1 ounce or 1 part.
Soft Paraffin	of each 2 ounces or 2 parts.
Hard Paraffin	

Melt the hard and soft paraffins together, add the oil, and stir until cold.

UNGUENTUM GALLÆ.

Ointment of Galls.

Take of

Galls, in fine powder	80 grains or 1 part.
Benzoated Lard	1 ounce or 5·5 parts.

Mix thoroughly.

UNGUENTUM GALLÆ CUM OPIO.

Ointment of Galls and Opium.

Take of

Ointment of Galls	1 ounce or 13·6 parts.
Opium, in powder	32 grains or 1 part.

Mix thoroughly.

UNGUENTUM GLYCERINI PLUMBI SUBACETATIS.

Ointment of Glycerine of Subacetate of Lead.

Take of

Glycerine of Subacetate of Lead	4½ ounces or 1 part.
Soft Paraffin	18 ounces or 4 parts.
Hard Paraffin	6 ounces or 1⅓ parts.

Melt the hard and soft paraffins together; then add the glycerine of subacetate of lead, and stir until the mixture has cooled.

UNGUENTUM HYDRARGYRI.

Ointment of Mercury.

Take of

Mercury . .	of each 1 pound or 16 parts.
Prepared Lard .	
Prepared Suet .	1 ounce or 1 part.

Rub them together until metallic globules cease to be visible.

UNGUENTUM HYDRARGYRI AMMONIATI.

Ointment of Ammoniated Mercury.

Take of

Ammoniated Mercury . .	50 grains or 1 part.
Simple Ointment . . .	450 grains or 9 parts.

Mix thoroughly.

UNGUENTUM HYDRARGYRI COMPOSITUM.

Compound Ointment of Mercury.

Take of

Ointment of Mercury .	6 ounces or 6 parts.
Yellow Wax . .	of each 3 ounces or 3 parts.
Olive Oil . . .	
Camphor . . .	1½ ounce or 1½ part.

Mix the wax and oil by the aid of heat, then incorporate the ointment of mercury, and, when the mixture is nearly cold, add the camphor in powder; stir the whole thoroughly together.

UNGUENTUM HYDRARGYRI IODIDI RUBRI.

Ointment of Red Iodide of Mercury.

Take of

Red Iodide of Mercury, in fine powder . . .	16 grains or 1 part.
Simple Ointment . . .	1 ounce or 27·3 parts.

Mix thoroughly.

UNGUENTUM HYDRARGYRI NITRATIS.

Ointment of Nitrate of Mercury.

Take of

Mercury, by weight .	3 ounces or 1 part.
Nitric Acid . .	12 fluid ounces or 3 fluid parts.
Prepared Lard . .	15 ounces or 8¾ parts.
Olive Oil . .	32 fluid ounces or 8 fluid parts.

Dissolve the mercury in the nitric acid with the aid of a little heat; melt the lard in the oil, by a steam or water bath, in a porcelain vessel capable of holding six times the quantity; and, while the mixture is at about 212° F., add the solution of mercury, also at about the same temperature, mixing them thoroughly. If the mixture do not froth up, increase the heat till this occurs. Keep it stirred until it is cold.

UNGUENTUM HYDRARGYRI NITRATIS DILUTUM.

Diluted Ointment of Nitrate of Mercury.

Take of

Nitrate of Mercury Ointment .	1 ounce or 1 part.
Soft Paraffin	2 ounces or 2 parts.

Mix.

UNGUENTUM HYDRARGYRI OXIDI RUBRI.

Ointment of Red Oxide of Mercury.

Take of

Red Oxide of Mercury, in very fine powder	62 grains or 1 part.
Hard Paraffin	$\frac{1}{4}$ ounce or 1·76 part.
Soft Paraffin	$\frac{3}{4}$ ounce or 5·3 parts.

UNGUENTUM HYDRARGYRI SUBCHLORIDI.

Ointment of Subchloride of Mercury.

Take of

Subchloride of Mercury	80 grains or 1 part.
Benzoated Lard	1 ounce or 5·47 parts.

Mix thoroughly.

UNGUENTUM IODI.

Ointment of Iodine.

Take of

Iodine	32 grains or 7 parts.
Iodide of Potassium	32 grains or 7 parts.
Glycerine	1 fluid drachm or 12 fluid parts.
Prepared Lard	2 ounces or 19 parts.

Rub the iodine and the iodide of potassium well together with the glycerine in a glass or porcelain mortar, add the lard gradually, and mix thoroughly.

UNGUENTUM IODOFORMI.

Ointment of Iodoform.

Take of

Iodoform	1 ounce or 1 part.
Benzoated Lard	9 ounces or 9 parts.

Melt the lard at a low temperature, add the iodoform, and stir together until dissolved and finally cooled.

UNGUENTUM PICIS LIQUIDÆ.

Ointment of Tar.

Take of

Tar	5 ounces or 2½ parts.
Yellow Wax . . .	2 ounces or 1 part.

Melt the wax at a low temperature, add the tar, and stir the mixture briskly while it cools.

UNGUENTUM PLUMBI ACETATIS.

Ointment of Acetate of Lead.

Take of

Acetate of Lead, in fine powder . . .	12 grains or 9 parts.
Benzoated Lard . .	1 ounce or 73 parts.

Mix thoroughly.

UNGUENTUM PLUMBI CARBONATIS.

Ointment of Carbonate of Lead.

Take of

Carbonate of Lead, in fine powder . . .	62 grains or 1 part.
Simple Ointment . .	1 ounce or 7 parts.

Mix thoroughly.

UNGUENTUM PLUMBI IODIDI.

Ointment of Iodide of Lead.

Take of

Iodide of Lead, in fine powder .	62 grains or 1 part.
Simple Ointment . . .	1 ounce or 7 parts.

Mix thoroughly.

UNGUENTUM POTASSÆ SULPHURATÆ.

Ointment of Sulphurated Potash.

Take of

Sulphurated Potash	30 grains or 5 parts.
Hard Paraffin	$\frac{1}{4}$ ounce or 18 parts.
Soft Paraffin	$\frac{3}{4}$ ounce or 55 parts.

Triturate the sulphurated potash in a glass or porcelain mortar, and gradually add the melted mixture of the hard and soft paraffins, rubbing them together until the ointment is perfectly smooth and free from grittiness.

This ointment should be recently prepared.

UNGUENTUM POTASSII IODIDI.

Ointment of Iodide of Potassium.

Take of

Iodide of Potassium	64 grains or 16 parts.
Carbonate of Potassium	4 grains or 1 part.
Water	1 fl. drachm or 14 fl. parts.
Benzoated Lard	1 ounce or 110 parts.

Dissolve the iodide of potassium and carbonate of potassium in the water, and mix thoroughly with the lard.

UNGUENTUM RESINÆ.

Ointment of Resin.

Take of

Resin, in coarse powder	8 ounces or 4 parts.
Yellow Wax	4 ounces or 2 parts.
Simple Ointment	16 ounces or 8 parts.
Almond Oil	2 fl. ounces or 1 fl. part.

Melt at a low temperature, strain the mixture, while hot, through flannel, and stir constantly while it cools.

UNGUENTUM SABINÆ.

Ointment of Savin.

Take of

Fresh Savin Tops, bruised	8 ounces or 4 parts.
Yellow Wax	3 ounces or 1½ part.
Benzoated Lard	16 ounces or 8 parts.

Melt the lard and the wax together on a water-bath, add the savin, and digest for twenty minutes. Then remove the mixture, and express through calico.

UNGUENTUM SIMPLEX.

Simple Ointment.

Take of

White Wax	2 ounces or 1 part.
Benzoated Lard	3 ounces or 1½ part.
Almond Oil	3 fluid ounces or 1½ fluid part.

Melt the wax and lard in the oil on a water-bath; then remove the mixture, and stir constantly while it cools.

UNGUENTUM STAPHISAGRIÆ.

Ointment of Stavesacre.

Take of

Stavesacre Seeds	4 ounces or 1 part.
Benzoated Lard	8 ounces or 2 parts.

Crush the seeds and macerate them in the lard kept melted over a water-bath for two hours. Strain through calico, and set aside to cool.

This ointment contains about 10 per cent. of oil of stavesacre.

UNGUENTUM SULPHURIS.

Ointment of Sulphur.

Take of

Sublimed Sulphur	1 ounce or 1 part.
Benzoated Lard	4 ounces or 4 parts.

Mix thoroughly.

UNGUENTUM SULPHURIS IODIDI.

Ointment of Iodide of Sulphur

Take of

Iodide of Sulphur	30 grains or 5 parts.
Hard Paraffin	¼ ounce or 18 parts.
Soft Paraffin	¾ ounce or 55 parts.

Triturate the iodide of sulphur in a glass or porcelain mortar, and gradually add the melted mixture of the hard and soft paraffins, rubbing them together until the ointment is perfectly cold and free from grittiness.

UNGUENTUM TEREBINTHINÆ.

Ointment of Turpentine.

Take of

Oil of Turpentine	1 fluid ounce or 8 fluid parts.
Resin, in coarse powder	54 grains or 1 part.
Yellow Wax	½ ounce or 4 parts.
Prepared Lard	½ ounce or 4 parts.

Melt the ingredients together by the heat of a steam or water-bath. Remove the vessel, and stir the mixture constantly while it cools.

UNGUENTUM VERATRINÆ.

Ointment of Veratrine.

Take of

Veratrine	8 grains or 1 part.
Hard Paraffin	¼ ounce or 14 parts.
Soft Paraffin	¾ ounce or 41 parts.
Olive Oil	1 fluid drachm or 7 parts.

Rub the veratrine and the oil together; melt the hard and soft paraffins, and when in cooling they begin to thicken, mix the whole thoroughly in a mortar until cold.

UNGUENTUM ZINCI.

Ointment of Zinc.

Take of

Oxide of Zinc	80 grains or 2 parts.
Benzoated Lard	1 ounce or 11 parts.

Add the oxide of zinc to the benzoated lard, previously melted at a low temperature, and stir the mixture constantly while it cools.

UNGUENTUM ZINCI OLEATI.

Ointment of Oleate of Zinc.

Take of

Oleate of Zinc	1 ounce or 1 part.
Soft Paraffin	1 ounce or 1 part.

Mix by aid of a little heat, and stir until nearly cold.

VAPORES.

Inhalations (6).

These are solutions or mixtures of substances with water designed so that when air is drawn over or through them, they give off a volatile body. For their administration an apparatus called an inhaler is used. Inhalation of conium contains some solution of potash, added to set free the volatile alkaloid conine.

VAPOR ACIDI HYDROCYANICI.

Inhalation of Hydrocyanic Acid.

Take of

Diluted Hydrocyanic Acid	10 to 15 minims.
Water (cold)	1 fluid drachm.

Mix in a suitable apparatus, and let the vapour that arises be inhaled.

VAPOR CHLORI.

Inhalation of Chlorine.

Take of

Chlorinated Lime	2 ounces.
Water (cold)	a sufficiency.

Put the powder into a suitable apparatus, moisten it with the water, and let the vapour that arises be inhaled.

VAPOR CONINÆ.

Inhalation of Conine.

Take of

Juice of Hemlock	½ fluid ounce.
Solution of Potash	1 fluid drachm.
Distilled Water	1 fluid ounce.

Mix. Put twenty minims of the mixture on a sponge, in a suitable apparatus, so that the vapour of hot water passing over it may be inhaled.

VAPOR CREASOTI.

Inhalation of Creasote.

Take of

Creasote	12 minims.
Boiling Water	8 fluid ounces.

Mix the creasote and water in an apparatus so arranged that air may be made to pass through the solution, and may afterwards be inhaled.

VAPOR IODI.

Inhalation of Iodine.

Take of

Tincture of Iodine	1 fluid drachm.
Water	1 fluid ounce.

Mix in a suitable apparatus, which can be gently heated, and let the vapour that arises be inhaled.

VAPOR OLEI PINI SYLVESTRIS.

Inhalation of Fir-wool Oil.

Take of

Fir-wool Oil	40 minims.
Light Carbonate of Magnesium . .	20 grains.
Water	a sufficiency.

Rub the fir-wool oil with the carbonate of magnesium, and gradually add sufficient water to produce 1 fluid ounce.

Put 1 fluid drachm of this mixture with ½ pint of cold water and ½ pint of boiling water into an apparatus so arranged that air may be made to pass through the solution, and may afterwards be inhaled.

VINA.

Wines (11).

The official wines may be regarded as a form of weak tincture. Two kinds of commercial wine are employed in their preparation, viz., sherry and orange wine.

VINUM ALOES.

Wine of Aloes.

Take of

Socotrine Aloes	1½ ounce.
Cardamom Seeds, bruised . . .	80 grains.
Ginger, in coarse powder . . .	80 grains.
Sherry	2 pints.

Macerate for seven days in a closed vessel, with occasional agitation; filter the liquor, and add sufficient sherry to make 2 pints.

VINUM ANTIMONIALE.

Antimonial Wine.

Take of

Tartarated Antimony .	40 grains or 1 part.
Sherry	1 pint or 219 fluid parts.

Dissolve, and filter if necessary.

VINUM AURANTII.

Orange Wine.

Wine made in Britain by the fermentation of a saccharine solution to which the fresh peel of the bitter orange has been added.

Characters and Tests.—A vinous liquid, having a golden sherry colour, and a taste and aroma derived from the bitter-orange peel. It contains 10 to 12 per cent. of alcohol, and is but slightly acid to test-paper.

Used in making Wine of Citrate of Iron, and Wine of Quinine.

VINUM COLCHICI.

Wine of Colchicum.

Take of

Colchicum Corm, sliced, dried, and reduced to No. 20 powder . .	4 ounces.
Sherry	1 pint.

Macerate the colchicum in the wine for seven days in a closed vessel, with occasional agitation, press and strain through calico; then add sufficient sherry to make 1 pint.

VINUM FERRI.

Wine of Iron.

Take of

Iron Wire . . .	1 ounce or 1 part.
Sherry	1 pint or 20 fluid parts.

Macerate for thirty days in a closed vessel, the iron being almost, but not quite, wholly immersed in the wine, the vessel frequently shaken, and the stopper removed; then filter.

VINUM FERRI CITRATIS.

Wine of Citrate of Iron.

Take of

Citrate of Iron and Ammonium	160 grains or 1 part.
Orange Wine	1 pint or 55 fl. parts nearly.

Dissolve, and let the solution remain for three days in a closed vessel, shaking it occasionally; afterwards filter.

VINUM IPECACUANHÆ.

Wine of Ipecacuanha.

Take of

Ipecacuanha, coarsely powdered	1 ounce.
Acetic Acid	1 fluid ounce.
Distilled Water	a sufficiency.
Sherry	1 pint.

Macerate the ipecacuanha in the acetic acid for twenty-four hours. Transfer to a percolator, and pass sufficient distilled water through to produce 1 pint of liquor. Evaporate the product to dryness over a water-bath. Powder the residue, and macerate it in the sherry for forty-eight hours, with occasional agitation, and filter.

VINUM OPII.

Wine of Opium.

Take of

Extract of Opium	1 ounce or 1 part.
Cinnamon Bark, bruised	75 grains or $\frac{1}{6}$ part.
Cloves, bruised	75 grains or $\frac{1}{6}$ part.
Sherry	1 pint or 20 fluid parts.

Macerate for seven days in a closed vessel, with occasional agitation, and filter.

It contains 22 grains of extract of opium, nearly, in 1 fluid ounce. Each fluid drachm contains about half a grain of morphine.

VINUM QUININÆ.

Wine of Quinine.

Take of

Sulphate of Quinine .	20 grains or 1 part.
Citric Acid . . .	30 grains or 1½ part.
Orange Wine . . .	1 pint or 438 fluid parts.

Dissolve, first the citric acid, and then the sulphate of quinine, in the wine; allow the solution to remain for three days in a closed vessel, shaking it occasionally; and afterwards filter.

Each fluid ounce contains 1 grain of sulphate of quinine.

VINUM RHEI.

Wine of Rhubarb.

Take of

Rhubarb Root, in coarse powder . .	1½	ounce.
Canella Bark, in coarse powder . .	60	grains.
Sherry	1	pint.

Macerate for seven days in a closed vessel, with occasional agitation: then strain, press, filter, and add sufficient sherry to make 1 pint.

VINUM XERICUM.

Sherry.

A Spanish wine.

Characters.—Pale yellowish-brown, containing about 17 per cent. of alcohol.

Used in making the Wines of Aloes, Antimony, Colchicum, Iron, Ipecacuanha, Opium, and Rhubarb.

SPECIAL SUBJECTS.

POSOLOGY.

The British Pharmacopœia may be taken generally as a safe guide with reference to doses; the quantities there given being the maximum range for adults. It should be borne in mind that no inflexible rule can be laid down for doses, as the practitioner soon finds they have to be varied with the idiosyncrasy of the patient. Many persons can take large doses of quinine with impunity, whereas 2 grains with others causes violent headache and vertigo; 1 ounce of sulphate of magnesium suits many persons, 1 drachm is enough for others.

Under special circumstances the official doses can be largely exceeded; for example, the author has seen prescribed 2 ounces of conium juice for a dose, also ½ a grain of hyoscyamine, also 40 minims of tincture of Indian hemp. Persons accustomed to iodide of potassium or opium, will take very large doses; of the former 80 grains has been given three times a day. It is found that many persons cannot tolerate belladonna, as it produces an unpleasant rash; and, opium should be prescribed very cautiously for children, or not at all.

It is known that many remedies are accumulative, suddenly giving a strongly marked physiological action. Under these circumstances the drug should be withdrawn for a time.

The chief drugs acting in this way are arsenic, digitalis, strychnine.

An attempt has been made in the following arrangement to classify doses according to magnitude. In doing so it has been found necessary to alter slightly some of the doses of the Pharmacopœia, but in every case a correct and safe range has been adhered to; in fact, the doses given are such as the author finds to be common in general practice, and at hospitals.

Doses in order of magnitude.

$\frac{1}{60}$ to $\frac{1}{30}$ grain.

Atropine.
„ Sulphate.
Veratrine.
Phosphorus.

$\frac{1}{32}$ to $\frac{1}{16}$ grain.

Arsenic.
Iodide of Arsenium.
Elaterinum.
Strychnine.
Perchloride of Mercury.

$\frac{1}{16}$ to $\frac{1}{4}$ grain.

Elaterium.
Apomorphine Hydrochlorate.
Extract of Calabar Bean.
„ „ Belladonna Alcoholic.
Tartarated Antimony.
Pilocarpine Nitrate.
Arseniate of Iron.
Red Iodide of Mercury.

$\frac{1}{8}$ to $\frac{1}{2}$ grain.

Morphine Salts.
Nitrate of Silver.
Extract of Stramonium.

$\frac{1}{4}$ to 1 grain.

Aloin.
Cocaine Hydrochlorate.
Oxide of Silver.
Sulphurated Lime.
Extract of Aconite.
Extract of Belladonna.
„ „ Gelsemium.
„ „ Indian Hemp.
„ „ Opium.
„ „ Nux Vomica.

1 to 3 grains.

Carbolic Acid.
Codeine.
Ergotin.
Iodoform.
Lupulin.
Menthol.
Acetate of Lead.
Sulphate of Copper.
Oxide of Antimony.
Reduced Iron.
Valerianate, Sulphate, and Oxide of Zinc.

3 to 8 grains.

Caffein Citrate.
Subchloride of Mercury.
Mercury with Chalk.
Sulphate of Quinine.
„ „ Iron.
Santonin.
Resin of Scammony.
Extract of Conium.
Extract of Calumba.
„ „ Colocynth (Comp.)
„ „ Gentian.
„ „ Henbane.
„ „ Hops.
„ „ Jaborandi.
„ „ Jalap.
„ „ Rhubarb.
Extract of Poppies.

5 to 10 grains.

Salicin.
Tartarated Iron.
Ammonio-Citrate of Iron.
Citrate of Iron and Quinine.
Phosphate of Iron.
Citrate of Lithium.
Butyl Chloral Hydrate.

All pills, except the following :—
Lead and Opium Pill, 3 to 5 grains.
Phosphorus Pill, 3 to 6 grains.
Soap and Opium Pill, 3 to 5 grains.
Mercurial Pill, 3 to 8 grains.
Iodide of Iron Pill, 3 to 8 grains.

5 to 30 grains.

Iodide, Bromide, Acetate, Chlorate, Nitrate, Sulphate, and Bicarbonate of Potassium.
Iodide, Bromide, Sulphite, Salicylate, Sulphocarbolate, and

Carbonates of Sodium. Bromide, Chloride, Benzoate, and Phosphate of Ammonium.
Chloral Hydrate.
Extracts of Krameria, Logwood, Pareira, Liquorice, Taraxacum, and Frangula.

10 to 60 grains.

Carbonate of Lime.
,, ,, Magnesium.
Magnesia.
Wood Charcoal.
Acid Tartrate of Potassium.
Aromatic Powder of Chalk.
Compound Jalap Powder.
,, Rhubarb Powder.
,, Liquorice Powder.
,, Tragacanth Powder.

¼ to ½ ounce.

Sulphate of Sodium.
,, ,, Magnesium.
Phosphate of Sodium.
Tartarated Soda.
Powdered Kousso.

Doses of Liquids.

½ to 2 minims.

Croton Oil.
Creasote.
Amyl Nitrite.
Essential Oils.

3 to 8 minims.

Solutions of Arsenic.
Solution of Strychnine.
Hydrocyanic Acid.

5 to 15 minims.

Tincture of Aconite.
,, ,, Indian Hemp.
,, ,, Cantharides.
,, ,, Capsicum.
,, ,, Iodine.
,, ,, Nux Vomica.
Tincture of Green Hellebore
,, ,, Ginger (strong).
,, ,, Gelsemium.
,, ,, Chloroform and Morphine.
Spirits of Camphor.
Liquid Extract of Cinchona.

10 to 30 minims.

Tincture of Belladonna.
,, ,, Chloroform.
,, ,, Colchicum.
,, ,, Digitalis.
,, ,, Acetate of Iron.
,, ,, Perchloride of Iron.
,, ,, Lavender.
,, ,, Lobelia.
,, ,, ,, Ethereal.
,, ,, Opium.
,, ,, Squills.

Tincture of Stramonium.
,, ,, Sumbul.
,, ,, Tolu.
Liquid Extract of Cimicifuga.
,, ,, ,, Ergot.
,, ,, ,, Male Fern.
,, ,, ,, Opium.
Wine of Antimony.
,, ,, Colchicum.
,, ,, Ipecacuanha.
,, ,, Opium.

All Dilute Mineral Acids.

½ to 1 fluid drachm.

Tincture of Asafœtida.
,, ,, Benzoin.
,, ,, Cimicifuga.
,, ,, Camphor (Comp.)
,, ,, Conium.
,, ,, Ergot.
,, ,, Guaiacum Ammoniat.
,, ,, Opium.
,, ,, Valerian.
,, ,, Henbane.
,, ,, Myrrh.
,, ,, Jaborandi.
,, ,, Podophyllum.

Tincture of Savin.
,, ,, Ginger.
Liquid Extract of Pareira.
,, ,, ,, Frangula.
,, ,, ,, Sarsaparilla.
,, ,, ,, Bael.
,, ,, ,, Sagrada.
,, Solution of Lime Saccharated.
,, ,, ,, Morphine Acetate.
,, ,, ,, Hydrochlorate.
,, ,, Bismuth.
,, ,, Potash.

$\frac{1}{2}$ to 2 fluid drachms.

Tincture of Arnica.
,, ,, Aloes.
,, ,, Orange.
,, ,, Buchu.
,, ,, Calumba.
,, ,, Cardamom.
,, ,, Cascarilla.
,, ,, Catechu.
,, ,, Chiretta.
,, ,, Cinnamon.
,, ,, Cinchona.
,, ,, Cubebs.
,, ,, Gall.
,, ,, Gentian.
,, ,, Hops.
,, ,, Jalap.
,, ,, Kino.

Tincture of Krameria.
,, ,, Lavender.
,, ,, Lemon.
,, ,, Quassia.
,, ,, Quinine.
,, ,, Rhubarb.
,, ,, Senega.
,, ,, Serpentary.
,, ,, Valerian.
Spirit of Ammonia (Aromatic).
,, ,, (Fetid).
,, Horseradish.
,, Cajuput.
,, Chloroform.
,, Juniper.
,, Lavender.
,, Peppermint.

Spirit of Nutmeg.
All Syrups, excepting those of Rhubarb and Senna.

2 to 4 fluid drachms.

Tincture of Rhubarb.
,, ,, Senna.
Syrup of Rhubarb.
,, ,, Senna.
Solution of Ammonium Acetate.

Solution of Ammonium Citrate.
Solution of Potassium Permanganate.
Juice of Taraxacum.
,, ,, Broom.

STRENGTHS OF SOME OF THE MOST IMPORTANT OFFICIAL PREPARATIONS.

OPIUM.

Confectio Opii	nearly	1 in 40
Emplastrum Opii		1 ,, 10
Enema ,,	Tincture	1 ,, 32
Extractum ,,	about	2 ,, 1
,, ,, Liquidum	Extract	1 ,, 20
Linimentum ,,	Tincture	1 ,, 2
Pil. Ipecac. c. Scilla	nearly	1 ,, 23
,, Plumbi c. Opio		1 ,, 8
,, Saponis Co.		1 ,, 6
Pulv. Cretæ Arom. c. Opio		1 ,, 40
,, Ipecac. Co.		1 ,, 10
,, Kino ,,		1 ,, 20
,, Opii ,,		1 ,, 10
Suppos. Plumbi Co.		1 ,, 15
Tinct. Camph. ,,		1 ,, 240
,, Opii		1 ,, 15
,, ,, Ammoniata		1 ,, 96
Trochisci Opii	Extract, $\frac{1}{10}$ grain in each.	
Unguentum Gallæ c. Opio	about	1 in 16
Vinum Opii	Extract	1 ,, 20

MORPHINE.

Liquor Morphinæ Acetatis		1	per cent.	Acetate.
,, ,, Bimeconatis	about	$1\frac{1}{4}$	,,	Bimeconate.
Liquor Morphinæ Hydrochloratis		1	,,	Hydrochlorate.
Injectio Morphinæ Hypodermica		10	,,	Acetate.

Suppositoria Morphinæ	$\frac{1}{2}$ grain in each
" " c. Sapone	$\frac{1}{2}$ " " "
Trochisci Morphinæ	$\frac{1}{36}$ " " "
" " c. Ipecac.	$\frac{1}{36}$ " " "
Tinct. Chlorof. et Morphinæ	1 " " 1 ounce.

ATROPINE.

Liquor Atropinæ Sulph.	1 per cent.
Lamellæ " "	$\frac{1}{5000}$ grain in each.
Unguentum Atropinæ (Pure Atropine)	8 grains in 1 ounce.

STANDARDISED PREPARATIONS.

Extractum Nucis Vomicæ	15 per cent. Alkaloids.
Tinctura " "	1 grain Alkaloids in 1 ounce.
Opium	10 per cent. Morphine.
Extractum Opii	about 20 " " "
Tinctura "	" 0·75 " " "
Extractum " Liquidum	1 " " "
Cinchonæ Rubræ Cortex	5-6 " " Alkaloids.
Extractum Cinchonæ Liq.	5 " " "

QUININE.

Tinctura Quininæ	1 grain Hydrochlorate in 1 drachm.
" " Ammoniata	1 grain Sulphate in 1 drachm.
Vinum "	1 " " " 1 ounce.
Ferri et Quininæ Citras	15 per cent. Quinine.

DILUTE ACIDS.

Acidum Hydrocyanicum Dil.	1 in 50
" Hydrobromicum "	1 " 10
" Hydrochloricum "	1 " 3·3

Acidum Lacticum Dil.	1 „ 6·66
„ Nitricum „	1 „ 5·16
„ Phosphoricum Dil.	1 „ 6·66
„ Sulphuricum „	1 „ 12
„ Aceticum „	1 „ 8

VARIOUS SOLUTIONS.

Liquor Bismuth et Ammon. Cit.	equals 3 grs. Oxide in 1 drachm.
Liquor Calcis	½ grain CaO „ 1 ounce.
„ „ Saccharatus	7 „ „ „ 1 „
„ Epispasticus	1 oz. Cantharides in 5 ozs.
„ Magnesiæ Carb.	10 grs. Carbonate „ 1 oz.
„ Potas. Permang.	1 in 100.
„ Strychninæ Hydrochlor	1 „ 100.

CHLOROFORM.

Linimentum Chloroformi	1 vol. in	2.
Tinctura „	1 „	10.
Spiritus „	1 „	20.
Aqua „	1 „	200.
Tinctura „ et Morphinæ	1 „	8.

ANTIMONY.

Pulvis Antimonialis	1 of Oxide in 3.
Vinum Antimoniale	1 grain Tartarated in ½ ounce.

ARSENIC.

Liquor Arsenicalis	1 per cent.
„ Arsenici Hydrochloricus	1 „ „
, Sodæ Arseniatis	1 „ „ Anhydrous Salt.
„ Arsenici et Hydrarg. Iod.	1 „ „ AsI_3.

MERCURY CHIEFLY UNCOMBINED.

Hydrargyrum c. Creta	1 of metal in 3.
Pilula Hydrargyri.	
Emplastrum Hydrargyri	
Unguentum ,,	1 ,, 2.
,, ,, Co.	1 ,, 4½.
Linimentum	1 of ointment in 3.
Suppositoria	5 grs. ,, ,, each.

MERCURY COMBINED.

Liquor Hydrarg. Perchlor	$\frac{1}{16}$ gr. Perchloride in 1 drachm.
Lotio Hydrarg. Flava	18 grs. ,, to 10 ozs. lime water.
Lotio Hydrarg. Nigra	30 ,, Calomel ,, ,, ,,
Unguentum Hydrarg. Ammoniati	1 in 10.
Unguentum Hydrarg. Oxidi Rubri	1 ,, 8.

VARIOUS PREPARATIONS.

Syrupus Ferri Iodidi		4·3 grain in 1 drachm.
,, ,, Phosph.		1 ,, 1 ,,
,, Chloral		10 grains in 1 ,,
Unguentum Aconitinæ		8 ,, 1 ounce.
,, Veratrinæ		8 ,, 1 ,,
Oleum Phosphoratum	about	1 per cent.
Pilula Phosphori	,,	1 in 90.
Injectio Apomorphinæ Hydrochlor.		2 per cent.
,, Ergotinæ		1 in 3.
Aqua Lauro-Cerasi		0·1 per cent. HCN.
Pulvis Elaterini Co.		1 of Elaterin in 40.

POSOLOGICAL TABLE.

Arranged for Different Ages.

AGE.	MAXIMUM DOSE.		
	1 fluid ounce.	60 grains.	20 grains.
One month	minims 30	grs. 3	gr. 1
Three months	—	,, 4	—
Six months	,, 40	,, 6	grs. 2
Nine months	—	,, 7	—
One year	fl. dr. 1	,, 8	,, 3
Two years	fl. drs. 1½	,, 10	,, 4
Three years	,, 1½	,, 12	,, 4
Four years	,, 2	,, 15	,, 5
Five years	,, 2½	,, 18	,, 6
Six years	,, 3	,, 20	,, 7
Seven years	,, 3½	,, 25	,, 8
Eight years	,, 4	,, 30	,, 10
Ten years	,, 4½	,, 35	,, 12
Twelve years	,, 5	,, 40	,, 14
Thirteen years	,, 5½	—	,, 15
Fifteen years	,, 6	,, 45	,, 16
Eighteen years	,, 6½	—	,, 17
Twenty years	,, 7	,, 50	,, 18
Twenty to forty-five years	fl. oz. 1	,, 60	,, 20
Fifty years	fl. drs. 7	,, 50	,, 18
Sixty to seventy years	,, 6	,, 45	,, 16
Eighty to ninety years	,, 5	,, 40	,, 14
One hundred years	,, 4	,, 30	,, 10

INCOMPATIBILITY.

By incompatibility is understood want of agreement, or want of harmony. To commit an error of this description in prescribing is a source of annoyance, and often the cause of unpleasantness to prescriber, dispenser, and patient.

For the avoidance of incompatibility no very good rules can be laid down, the most serviceable knowledge being that which is gained by experience. A great assistance, however, will be afforded the prescriber, if he has a thorough acquaintance with the chemical, physical, and therapeutic properties of drugs.

Incompatibility is of three kinds:—

CHEMICAL. PHYSICAL. THERAPEUTIC.

Chemical Incompatibility.—By this is meant a change of state brought about by the union of two or more chemical compounds, which will not mingle with each other, without undergoing chemical change. The following are some of the most commonly occurring examples:—

Soluble Iron Salts are incompatible with Carbonates and Hydrates of Potassium, Sodium, and Ammonium; Tinctures containing Ammonia; Salicylates of Potassium and Sodium; Tinctures, Infusions, Decoctions, and similar preparations containing Tannic Acid; Iodides of Potassium, Sodium, and Ammonium.

As an example, a prescription often met with is a mixture of iodide of potassium and perchloride of iron; here iodine is set free; if the patient swallows it, much irritation is caused in the throat and air passages. If iodine and iron are desired in combination, the syrup of iodide of iron may be given.

Mineral and vegetable acids are incompatible with Hydrates, Carbonates, and Acetates of Potassium, Sodium, Ammonium, Magnesium, and Lime; also with soluble Benzoates and Salicylates.

Sulphuric acid and carbonate of lime, being both useful remedies for diarrhœa, occasionally suggest themselves as a useful combination; the result of their mixture is effervescence, with formation of sulphate of lime, a combination of doubtful remedial value.

Another example of the same class is to mix Spirits of Nitrous Ether and Iodide of Potassium, the result being they yield free iodine. The change is due to free acids unavoidably present in the spirit. Here it is the dispenser's duty to neutralise the acids with a little solution of bicarbonate of potassium before adding the iodide; they will then go well together.

Hydrates and Carbonates of Potassium, Sodium, and Ammonium, are incompatible with all soluble Mercury, Lead, Copper, Iron, Alum, and Zinc Salts; also with Chloride of Ammonium, Acid Tartrate of Potassium, Bicarbonates of Potassium and Sodium.

The following equation illustrates how a hydrate changes a bicarbonate:—

$$\underset{\substack{\text{Hydrate of}\\ \text{potassium.}}}{\mathrm{KHO}} + \underset{\substack{\text{Bicarbonate}\\ \text{of potassium.}}}{\mathrm{KHCO_3}} = \underset{\substack{\text{Carbonate of}\\ \text{potassium.}}}{\mathrm{K_2CO_3}} + \underset{\text{Water.}}{\mathrm{H_2O}}.$$

Solutions of the Alkaloid Salts are, as a rule, precipitated or decomposed by Alkaline Carbonates, Hydrates, and Salicylates; also by Tannic and Gallic Acids.

A few more worth knowing are the following:—

Borax and Sulphate of Zinc, give Borate of Zinc and Sulphate of Sodium.

Borax and Carbonate of Sodium are quite compatible when mixed with water alone; if glycerine be added, a brisk effervescence takes place.

Oxide and nitrate of silver, also permanganate of potassium, decompose in contact with any organic matter. The first, mixed with creasote, forms an explosive mixture; the latter oxidises glycerine with violence.

These examples are sufficient to illustrate chemical incompatibility. Bear in mind that a decomposition in a mixture does not always mean that it is unsuited for administration. There are several instances where it is for the good of the patient, as in the effervescent mixtures so commonly given; but in all such cases the incompatibility must be understood, or the prescriber runs the risk of producing dangerous combinations from otherwise harmless materials.

Physical Incompatibility.—Here it is the form or mechanism of the prescription that is faulty. The ingredients may be ill-assorted, or improperly proportioned, often unsightly, unpleasant, and not always free from danger.

As examples, balsams and oils are sometimes prescribed with insufficient mucilage to emulsify them; consequently, they float on the surface of the mixture, and the patient risks getting an overdose. Or it may be a resinous tincture, such as guaiacum, is prescribed simply in water, the result being that the resin separates in large flocks, which aggregate and stick to the sides or bottom of the bottle, the patient getting little or no guaiacum. To get over such difficulties when ordering balsams, oils, oleo-resins, and resinous tinctures, it is best to prescribe mucilage of acacia, a sufficiency, leaving the proper admixture to the skill of the pharmacist.

The commonest physical incompatibles are: Watery Extracts with Fats, Oils, and Alcohol. Alcoholic Extracts and Resins, with Water, and Watery Solutions. Salts, such as Chlorate of Potassium or Gallic Acid, in excess of their solubility in water. Spirit of Camphor and Water give a white separation of Camphor.

Heat is a source of physical incompatibility; too much may be used in making solutions, as adding boiling water to bicarbonate of potassium, or carbonate of ammonium, CO_2 being evolved. Heat may also cause the escape of an essential oil, ether, alcohol, ammonia, or prussic acid. Again, high temperature is fatal to the peptic and pancreatic ferments.

Therapeutic Incompatibility.—Under this head are included all influences and agents having opposite effects upon the human frame, as Heat and Cold, Excitement and Repose, Harmony and Discord.

Among drugs well-marked antagonists are found in the following:—

Aconite and Digitalis.—Aconite depresses, whilst digitalis strengthens the heart.

Belladonna and Calabar Bean.—The former dilates, the latter contracts the pupil.

Strychnine and Chloral.—The first increases the excitability of the spinal cord; the latter diminishes it.

Bromide of Potassium and Phosphorus.—The first is a sedative, the latter an excitant.

Therapeutic incompatibility has its uses, being of great service in cases of poisoning. It is recorded, in the *British Medical Journal*, that a patient who had taken 1 ounce of tincture of aconite recovered after the hypodermic injection of some digitalin. It is the same with chemical incompatibility. Salts of lime are given as antidotes to oxalic acid, and albumen for perchloride of mercury.

POISONS AND THEIR ANTIDOTES.

General Remarks.—Having found the nature of the poison taken, it is of the first importance to select and apply the most effective antidote. Some cases of poisoning can be treated with general antidotes, but the majority are usually combated by special treatment.

Of the general antidotes the best is an emetic, such as 20 grains of sulphate of zinc, or a tablespoonful of mustard mixed in either case with 3 or 4 ounces of warm water. If these are not effectual, inject under the skin $\frac{1}{4}$ grain of hydrochlorate of apomorphine; it is a most effective emetic.

Animal and vegetable charcoals are good general antidotes to vegetable poisons, such as alkaloids and glucosides, the charcoal absorbing the poison.

For corrosive salts and mineral acids give demulcent drinks, such as milk, barley water, and gum water, dissolving in each ounce about 5 grains of bicarbonate of potassium or sodium. If caustic alkalies, such as potash, soda, lime, or ammonia, have been taken, add vinegar to the demulcent.

Poison.	Antidote.
Aconite	Digitalis, Atropine.
Ammonia	Demulcents and Dilute Acids.
Antimony (Tartar Emetic)	Tannic Acid, Coffee.
Acids:—	Chalk, Magnesia, Demulcents, Olive Oil.
Carbolic	
Sulphuric	
Hydrochloric	
Nitric	
Oxalic	

Acid Hydrocyanic	Dialysed Iron, Hydrate of Iron, Stimulants, Cold Douche.
Arsenic	Dialysed Iron, Hydrate of Iron, Stimulants.
Atropine	Pilocarpine Nitrate, $\frac{1}{3}$ grain under the skin; Emetics.
Belladonna	Same as Atropine.
Camphor	Emetics, Stimulants.
Cantharides	Demulcents, Morphine $\frac{1}{2}$ grain.
Chloral Hydrate	Electricity, Friction, Nitrite of Amyl, 3 drops.
Chloroform	
Corrosive Sublimate	White of Egg, Aromatic Spirit of Ammonia.
Conium (Hemlock)	Emetics, Spirit of Ammonia, Artificial Respiration.
Copper Salts	Emetics, White of Egg, Carbonate of Sodium.
Creasote	Magnesia, White of Egg.
Cyanide of Potassium	Dialysed Iron, Stimulants, Cold Douche.
Ether	Artificial Respiration, Nitrite of Amyl.
Gelsemium	Emetics, Atropine $\frac{1}{60}$ grain under the skin, Stimulants.
Barium Salts	Emetics, Sulphate of Magnesium.
Lead Salts	Milk, Sulphate of Magnesium.
Morphine	Emetics, Electricity, Coffee, Exercise.
Opium	Same as Morphine.
Phosphorus	Sulphate of Copper, Magnesia, Milk.
Physostigmine (Eserine)	Atropine, Chloral, Strychnine.
Potash (Caustic)	Dilute Acids, Milk, Gruel.
Red Precipitate	Emetics, Albumen, Ammonia.

Silver Salts	Salt, Dilute HCl, Milk.
Soda (Caustic)	Dilute Acids, Milk, Gruel.
Strychnine	Emetics, Bromide of Potassium, Nitrite of Amyl.
Tin Salts	Emetics, Magnesia, Demulcents.
Tobacco	Emetics, Tannic Acid, Stimulants, Hypodermic Injection of $\frac{1}{25}$ grain Strychnine.
Veratrine	Emetics, Stimulants, Strong Coffee.
White Precipitate	Emetics, Albumen, Ammonia.
Zinc Salts	Carbonate of Sodium, Demulcents.

For further information on this subject read Dr. W. Murrell's "What to do in Cases of Poisoning."

WEIGHTS, MEASURES, SYMBOLS.

The weights employed in British pharmacy are those belonging to the Avoirdupois system, the signs pertaining to which, are in constant use by prescribers; hence the student must learn them thoroughly. The divisions are expressed by the following abbreviations:—

gr. = granum, a grain, $\frac{1}{437}$th part of the ounce.
oz. = uncia, an ounce, 437·5 grains.
lb. = libra, a pound, 16 ounces, or 7,000 grains.

For the convenience of prescribers certain obsolete symbols of the Apothecaries system are allowed to remain in use. They are the following:—

℈ = scrupulus, a scruple, or 20 grains.
ʒ = drachma, a drachm, or 60 grains.
℥ = uncia, an ounce, or 480 grains.

The measures of capacity for apportioning fluids, and their symbols, are written thus:—

♏ = minimum, a minim = ·9114 gr. of water.
ʒ = drachma, a drachm = 60 minims.
℥ = uncia, an ounce = 8 fluid drachms.
O = octarius, a pint = 20 fluid ounces.

To be literally correct when prescribing fluids, the symbol should be preceded by the word *fluid*, usually abbreviated thus, *fl.* ℥. It is the cutsom, however, to omit the word *fluid*, as the pharmacist understands that all liquids are to be measured and solids weighed, unless otherwise directed.

It is well worth observing that a minim of water weighs less than a grain, in fact, ·9114 grain. In the fluid ounce of water there are 480 minims, but as each minim weighs less than a grain, the fluid ounce of water only weighs 437·5 grains, or 1 ounce by weight. The explanation of this is that the weight of a minim of any fluid varies with its specific gravity.

The following symbol is occasionally seen on prescriptions:—

Gtt = gutta, a drop.

It is a very vague and unmeaning quantity, and should be avoided where accuracy is desired, as drops vary considerably with the nature of the fluid and form of the mouth of the dropping vessel.

DOMESTIC MEDICINE MEASURES.

The common measures employed for giving medicines in the household, or at the bedside, are the teaspoon and tablespoon measures. By this is to be understood, not the domestic metal spoons, but glass measures sold purposely for measuring medicine. Spoons are of such variable capacities that they cannot be relied on, some holding twice the quantity of others.

When in a prescription a drachm of a medicine is ordered to be taken, that quantity is translated as meaning one teaspoonful, thus:—

℞. *Vini Ferri* ʒj.
Ter die sumendam.

means a teaspoonful of steel wine to be taken three times a day.

℞. *Ammonii Carbonatis* gr. iij.
Vini Ipecacuanhæ, ♏v.
Aquæ Chloroformi ʒij.
Fiat mistura, quartis horis sumenda.

This means that the three ingredients are to be mixed to form a mixture, and that the above quantity, amounting to two teaspoonfuls, is to be taken every four hours.

When a fluid ounce is ordered to be taken, it is translated as meaning two tablespoonfuls, thus :—

℞. *Misturæ Cretæ*, ℥j.
Quater die sumendam, *mitte uncias sex.*

That is, one ounce or two tablespoonfuls of chalk mixture has to be taken four times a day, and six ounces sent.

From the above remarks it follows that :—

ʒj. = 1 teaspoonful.
ʒij. = 2 teaspoonfuls.
ʒiij. = 3 „

When 4 drachms of a medicine is desired, the drachm symbol is no longer used, but ½ ounce is written, as follows :—

℥ss. = 1 tablespoonful.
℥j. = 2 tablespoonfuls.
℥ij. = 4 „ (a wine-glassful).

The ss in the above is an abbreviation of the Latin word *semis*, a half. It is often translated as *dimidium*, thus :—

gr. ss. = granum dimidium, ½ grain.
ʒss. = drachma dimidia, ½ drachm.
℥ss. = uncia dimidia, ½ ounce.

For further information on prescribing, Handsel Griffith's "Lessons on Prescriptions" should be read.

WEIGHTS AND MEASURES OF THE BRITISH PHARMACOPŒIA.

Weights.

1 grain	gr.		
1 ounce (Avoir.)	oz.		= 437·5 grains.
1 pound	lb.	= 16 ounces	= 7,000 grains.

Measures of Capacity.

1 minim	min.		
1 fluid drachm	fl. drm.	=	60 minims.
1 fluid ounce	fl. oz.	=	8 fluid drachms.
1 pint	O.	=	20 fluid ounces.
1 gallon	C.	=	8 pints.

Measures of Length.

1 inch.	in.	
12 inches	= 1 foot.	
36 inches	= 3 feet	= 1 yard.

Relation of Measures to Weights.

1 minim is the measure of				0·9114583	grains	of water.
1 fl. drachm	,,	,,		54·6875	,,	,,
1 fl. ounce	,,	,,	1 ounce or	437·5	,,	,,
1 pint	,,	,,	1·25 pound or	8750·0	,,	,,
1 gallon	,,	,,	10 pounds or	70000·0	,,	,,

WEIGHTS AND MEASURES OF THE METRIC SYSTEM.

Weights.

1 milligramme	=	the	1,000th	part of	1 grm. or	0·001	grm.
1 centigramme	=	the	100th	,,	,,	0·01	,,
1 decigramme	=	the	10th	,,	,,	0·1	,,
1 gramme	=	weight of a cubic centimetre of water at 4° C.				1·0	,,

1 dekagramme = 10 grammes or . . 10·0 grm.
1 hectogramme = 100 grammes or . . 100·0 ,,
1 kilogramme = 1,000 grammes or . . 1000·0 ,,

Measures of Capacity.

1 millilitre = 1 cub. centim. or the measure of 1 grm. of water.
1 centilitre = 10 cub. centims. or the measure of 10 grms. ,, ,,
1 decilitre = 100 cub. centims. or the measure of 100 ,, ,, ,,
1 litre . =1,000 cub. centims. or the measure of 1,000 ,, (1 kilo.)

Measure of Length.

1 millimetre = the 1,000th part of 1 metre or 0·001 metre.
1 centimetre = the 100th ,, ,, 0·01 ,,
1 decimetre = the 10th ,, ,, 0·1 ,,
1 metre . . . . 1·0 ,,

Relation of the Weights of the British Pharmacopœia to the Metric Weights.

1 pound . . . = 453·5927 grammes.
1 ounce . . . = 28·3495 ,,
1 grain . . . = 0·0648 ,,

Relation of Measures of Capacity of the British Pharmacopœia to the Metric Measures.

1 gallon = 4·543458 litres.
1 pint = 0·567932 ,, or 567·932 cubic centims.
1 fluid ounce = 0·028397 ,, 28·397 ,, ,,
1 fluid drachm = 0·003550 ,, 3550 . ,, ,,
1 minim = 0·000059 ,, 0·059 ,, ,,

Relation of the Metric Weights to the Weights of the British Pharmacopœia.

1 milligramme = 0·015432 grains.
1 centigramme = 0·15432 „
1 decigramme = 1·5432 „
1 gramme = 15·432 „
1 kilogramme = 2 lbs. 3 ozs. 119·8 grs., or 15432·349 „

Relation of the Metric Measures to the Measures of the British Pharmacopœia.

1 millimetre = 0·03937 inches.
1 centimetre = 0·39371 „
1 decimetre = 3·93708 „
1 metre = 39·37079 inches or 1 yard 3·37 „
1 cubic centimetre = 15·432 grains.*
1 litre = 1·76077 pint or 1 pint 15 ozs. 1 dr. 43 m.

SYMBOLS AND ATOMIC WEIGHTS OF THE ELEMENTARY BODIES

mentioned in the British Pharmacopœia.

Elementary Bodies.	Symbols and Atomic Weights.
Aluminium	Al = 27
Antimony (Stibium)	Sb = 120
Arsenium	As = 75
Barium	Ba = 137
Bismuth	Bi = 209
Boron	B = 11
Bromine	Br = 80
Calcium	Ca = 40
Carbon	C = 12
Cerium	Ce = 141

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* The cubic centimetre is a standard at 4° C. (39°·2 F.), the grain at 62° F. (16°·66 C.).

Elementary Bodies.	Symbols and Atomic Weights
Chlorine	Cl = 35·5
Chromium	Cr = 52·5
Copper (Cuprum)	Cu = 63·4
Gold (Aurum)	Au = 196·5
Hydrogen	H = 1
Iodine	I = 127
Iron (Ferrum)	Fe = 56
Lead (Plumbum)	Pb = 207
Lithium	L = 7
Magnesium	Mg = 24
Manganese	Mn = 55
Mercury (Hydrargyrum)	Hg = 200
Nitrogen	N = 14
Oxygen	O = 16
Phosphorus	P = 31
Platinum	Pt = 195
Potassium (Kalium)	K = 39
Silver (Argentum)	Ag = 108
Sodium (Natrium)	Na = 23
Sulphur	S = 32
Tin (Stannum)	Sn = 118
Zinc	Zn = 65

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